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ABSTRACT

A lesson was developed containing materials designed to assist students in their adaptation to the novelties of a computer assisted or managed instructional environment, providing students with appropriate role models for increasing acceptance of their increased responsibility for learning and introducing a progress tracking approach to assist students in achieving completion goals in a self-paced training environment. Formative evaluation data from small group and operational lesson implementation in the Air Force Advanced Instructional System (AIS) reveal a 9 to 18 percent reduction in course completion time, and suggest that substantial time savings can be obtained by a combination of this type of computer instruction orientation and time management skill training with a computer-based progress targeting and feedback system. Appendices include a copy of the lesson, student success guidelines, a course completion map, a material facilities time sheet, two lesson criterion test forms, and a glossary. (Author/CMV)

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ORIENTATION/TIME MANAGEMENT SKILL TRAINING LESSON:
DEVELOPMENT AND EVALUATION

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Materials contained within this report are designed to assist students in their adaptation to the novelties of a computer-assisted or -managed instructional environment. This Orientation/Time Management lesson provides students with appropriate role models for increasing acceptance of their increased responsibility for learning and, it introduces a progress tracking approach to assist students in achieving completion goals in a self-paced training environment. Evaluation data from an implementation of these materials in the Air Force Advanced Instructional System (AIS) suggest that substantial time savings can be obtained by a combination of this type of orientation and time management skill training with a computer-based progress targeting and feedback system (on the order of 9 to 18 percent reduction in course completion times).

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FOREWORD

The authors wish to express their appreciation to a number of persons whose assistance and cooperation made significant contributions to the work reported here. Dr. Frank C. Richardson, University of Texas at Austin, provided invaluable guidance in the design of the student skill modules, the instructor orientation package, and their accompanying procedures. Mr. Joseph P. Lamos, Air Force Human Resources Laboratory at Lowry AFB, was the Technical Monitor and Dr. Harold F. O'Neil, Jr., was the Program Manager from the Defense Advanced Research Projects Agency for the majority of the contract performance period. Both these individuals made extremely valuable contributions to this research and development effort. Finally, special appreciation is expressed to the many Air Training Command instructors and supervisors without whose support this project would not have been possible.

TABLE OF CONTENTS

PARAGRAPH TITLE PAGE

I. Introduction and Overview of CMI Skill Modules Project 5

Project Goals. 5

Orientation/Time Management Module Objectives 6

Project Context: The Air Force Advanced Instructional System 7

AIS Course Structure 7

AIS Student Progress Management Component 7

II. Problem Definition 9

Student Interview Procedures 9

Student Interview Results 9

III. Module Design and Development 13

Module Design 13

Evaluation Instruments 13

Instructional Strategies and Procedures 13

IV. Formative Evaluation 15

Orientation Module 15

Small Group Tryouts 15

Operational Tryouts 16

Time Management Module 19

Small Group Tryouts 19

Operational Tryouts 20

V Summative Evaluation 22

Phase I Evaluation Procedures and Results 22

TABLE OF CONTENTS (Continued)

PARAGRAPH TITLE PAGE

Module Performance Data 22

Block Completion Time and Score Data 23

Student Attitude Questionnaire Data 25

Phase II Evaluation Procedures and Results 25

Module Performance Data 25

Block Completion Time and Score Data 25

Student Attitude Questionnaire Data 28

VI. Discussion and Conclusions 29

Implementation Recommendations 31

Appendix 32

A. Orientation/Time Management Lesson 33

B. Summary of How To Be A Successful Student In A Computer-Managed Instructional (CMI) System 97

C. Course Completion Map 98

D. Materiel Facilities (MF) Time Sheet 100

E. Orientation/Time Management Criterion Test Form #1 102

F. Orientation/Time Management Criterion Test Form #2 106

G. Glossary 110

LIST OF TABLES

TABLE | PAGE

1 Student Opinions of a CMI Environment 10

2 Student and Staff Opinions of Initial Orientation Module 17

3 Block Times and Scores for Phase I Summative Evaluation and Control Groups 24

4 Block Times for Phase II Summative Evaluation and Control Groups 27

5 Time Savings in Blocks 2 and 3 Attributable to Various Treatments 30

I. Introduction and Overview of CMI Skill Modules Project

The benefits to be derived from computer-managed instruction (CMI), within the framework of large-scale, military technical training, are very promising. CMI is an individualized instructional system in which the majority of the students' instructional activities are completed off-line, in contrast to computer-assisted instruction (CAI), where all instructional activities are conducted on-line at an interactive computer terminal. The computer's role in CMI is that of evaluator, diagnostician, prescriber, and manager of instructional events. Although considerable effort has been devoted to improving the hardware, software, and instructional technology which support CMI systems, the problem of preparing students to utilize their skills effectively and efficiently within this individualized instructional system has received little attention.

It must be assumed, moreover, that until various forms of individualized instruction become commonplace in our public school system, military trainees will find CMI to be an extremely novel learning experience. Few of these trainees will possess the knowledge or skills which enable them to use the capabilities of computer-based systems efficiently. Although there are certainly some basic skills which transfer from one learning environment to another, many trainees either will not have these skills or will not know how to adapt them to computer-managed training. If the CMI systems being designed and built are to be most effective, there is a definite requirement for orienting students to novel system capabilities and equipping them with minimum skills to capitalize on these capabilities. This technical report presents information specific to the Orientation/Time Management module. Detailed information on the design and conduct of the entire CMI Skill Module Project will be found in AFHRL-TR-79-20.

The following section delineates the specific goals of the CMI Skill Modules Project. This is followed by a summary of the objectives of part of this project, the Orientation/Time Management module, and a description of the project context, the Air Force Advanced Instructional System (AIS). Sections II through V summarize the issues the module was designed to address, the module design and development activities, and the formative and summative evaluation results, respectively. Section VI is a discussion of the results and conclusions. Appendixes A to G present the Orientation/Time Management module and its criterion measures as the final product of this study.

Project Goals

The overall goals of the CMI Student Skills Project were to (a) determine the characteristic problems which students encounter in a CMI system and those strategies which effectively help students cope with or adapt to these problems, (b) design, develop, implement, and evaluate a small set of self-contained instructional modules for increasing the effectiveness with which students adapt to and perform in a CMI environment, and (c) investigate procedures for individualizing the assignment of these modules so as to minimize total completion times and training costs.

The student skill modules developed had the design goal of being short packages which could be assigned near the beginning of an arbitrary technical training course but which also would incorporate strategies or procedures that would continue to affect student behavior throughout the course (i.e., behavioral self-control strategies). Thus, the rationale governing the module design was to include those instructional strategies and procedures appropriate not only to the teaching of specific skills, but also to the review and practice of a set of basic skills defined as necessary for effective and efficient student performance in a CMI system.

Orientation/Time Management Module Objectives

The major goal of the Orientation/Time Management module was, of course, reduction in course completion time. It was hypothesized that if students were given a solid understanding of the CMI environment, they would (a) waste less time trying to figure it out for themselves; (b) use the CMI-provided instructional tools at an earlier point in the course and would accordingly; (c) spend more time learning the course material and (d) use their study time more efficiently. It was also hypothesized that the most promising mechanism for maintaining student involvement with course completion time would be a means by which students would chart their daily progress throughout the course relative to their individual target rate (predicted rate). It was reasoned that while it would be relatively easy for students to dismiss adverse information about their rate of progress if they simply received it on the first Student Status Report of the day, it would be much more difficult to ignore this state of affairs if students were required to plot their individual daily deviations from the target rate. It was further reasoned that students would be more accepting of course completion targets if they were actively involved in initiating the tracking chart.

Subordinate objectives for this lesson were as follows: (a) students will be provided with appropriate role models for increasing acceptance of their increased responsibility for learning; (b) students will express positive affect regarding their experience with CMI in general, and the Student Progress Management component (see pages 7 and 8), in particular; (c) students will maintain their individual progress tracking charts on a daily basis; and (d) students and instructors will meet for scheduled Progress Counseling Sessions (described in Section III).

Project Context: The Air Force Advanced Instructional System (AIS)

The context for the Computer-Managed Instruction Student Skills Project was the Air Force AIS located at Lowry Air Force Base, Colorado. The AIS is a prototype, multi-media, computer-based instructional system designed to improve the effectiveness and efficiency of Air Force technical training and to provide an operational research facility for assessing innovations in instructional technology. The system supports four technical training courses representative of the range of cognitive and performance skills required by enlisted Air Force personnel. An adaptive instructional decision model utilizes state-of-the-art computer hardware and software, as well as currently available statistical methodologies and instructional procedures, to provide instructional management and individualized assignments to alternative instructional materials.

AIS Course Structure. Each AIS course is divided into "blocks" of instruction, which may require anywhere from 1 to 15 days to complete. Each block contains a number of lessons and a comprehensive, end-of-block test. Within a block, lessons are arranged in a hierarchy based on their prerequisite relationships. A typical hierarchy resembles a set of parallel chains diverging and converging on certain pivotal lessons, and a student may alternately work on lessons in 2 or more parallel chains.

The basic unit of instruction is the lesson. Each lesson consists of a set of objectives, 2 or more forms of a criterion test, and typically, a self-test by which students can evaluate their understanding of the lesson before taking the criterion test. A lesson's instruction is provided by 1 or more modules, each of which teaches the same lesson objectives and covers the same lesson content. When 2 or more modules are present, they represent alternative instructional treatments or strategies. Depending on the lesson content, objectives, and nature of the treatment, a module may be a programmed text, an elaborated technical order, or an audio-visual presentation.

AIS Student Progress Management Component. During the design and development phases of this project (early to mid-1977), software to support a Student Progress Management component (SPMC) was being developed. Prior to that time, the AIS supported a simple form of student progress monitoring which generated numerous criticisms from instructional personnel. The SPMC was accordingly designed to address each of these problems. Basically, these problems centered around four areas. First, instructional personnel expressed a need for individualizing student progress information. Second, the general opinion was that AIS students could, if motivated, complete more course work than they were doing during the regular, 6-hour shifts. A related concern was to increase the amount of work students completed off-shift. Lessons were sometimes voluntarily completed out of class, and students who failed 1 or more block tests were assigned off-shift remedial training. If, however, a student passed the block tests and progressed at a "reasonable" pace, there was no pressure to continue work off-shift. The fourth problem concerned prediction of course completion dates. Students' anticipated course completion dates were needed 10 days in advance of graduation for "out-processing," but variability in time-to-complete was so great that useful predictions were unattainable in the original system.

The SPMC is intended to address each of the foregoing problems, as well as the students' expressed concern that they have some method for measuring their progress that is uniform throughout the course (see Section II of this report). The software for the SPMC generates a target course completion time for each student which is predicted on the basis of the student's pre-course abilities, attitudes, interests, and background information. It also assumes that some lessons will be completed as homework.

The initial SPMC printout occurs when the target rate is first computed, following the tabulation of the student's last preassessment test form. Target times for each block and the student's total course completion time are listed in units of days and tenths of days. This printout is delivered to the student's learning center instructor, and the information is used by the student in completing the progress monitoring procedures described in the Orientation/Time Management module.

The student's first prescription, or Status Report, of each day contains the days and tenths of days of the course completed and the days and tenths of days spent in class. The amount of work constituting a "day" of the course is a function of the student's target rate. Each student's rate of progress is also reported on the learning center roster which instructors receive at the beginning of each shift. Information on the roster includes the number of days and tenths of days remaining to the student's targeted course completion date and the number of days and tenths of days that the student is ahead of target. A negative value for "days ahead of target" indicates that the student is behind target and provides a means by which instructors can detect students who are falling behind in their course work.

If an instructor decides that a student's target rate should be reset, a target change request can be forwarded to the course Database Manager, who changes student targets through an interactive editor. Although it would have been feasible to alter students' target rates automatically on the basis of their actual rates of progress, specific intervention by the instructor was purposefully required. Given the variety of reasons why students may be behind or ahead of their target rates, it was reasoned that the instructor is in a better position to determine the correct action than is the SPMC software.

II. Problem Definition

In order to determine the characteristic problems students experience in a CMI environment, one-to-one student interviews were conducted by the evaluators. These are described in the following sections.

Student Interview Procedures

The procedures used in interviewing AIS students consisted of a semi-structured discussion wherein the investigator asked a set of predetermined, open-ended questions of each interviewee. These questions were designed to be general in nature and, depending on the interviewee's response, could be followed up by more specific questions.

Students to be interviewed were drawn from the Inventory Management (IM) and Materiel Facilities (MF) courses. Although the students were told that they had been selected at random for these interviews, they were actually selected because they belonged to one of four groups: "IM good," "IM poor," "MF good," and "MF poor." "Good" students were those who were completing the course faster than the average student and with above average grades; "poor" students were those who were completing the course at a slower than average rate with below average grades. All selected students were working in the last half of the course and were selected on the basis of records maintained by the AIS. Twenty IM students and 6 MF students were interviewed for approximately 30 minutes each.

Student Interview Results

Data from the student interviews are summarized in Table 1. Briefly, students liked the AIS and the self-pacing concept and believed that their instructors cared about how they were doing. Many students indicated, however, that they were initially afraid to ask their instructor questions but later discovered that this was an unjustified fear. The biggest problem that students had with the course appeared to be motivation and becoming depressed during specific times in the course.

The following conclusions were drawn from these interviews: (a) students need a method of measuring their progress, and the method should be uniform throughout the course, (b) in conjunction with this progress measurement, students need to be taught some basic time management skills, (c) students need to be given some information on what to expect in an individualized, computer-managed course, and (d) students need to be told that trying for the best possible grades, to the exclusion of any concern for time, is not necessarily the way "to do better" in this course.

TABLE 1

Student Opinions of a CMI Environment

QUESTIONS	STUDENT RESPONSES
1. What do you think about AIS?	All students interviewed liked AIS.
2. How do you like the idea of self-pacing?	IM-G, MF-G, & MF-P students liked self-pacing.[a] IM-P students preferred group-pacing.
3. Do you have a feeling for how you are progressing?	Most students had devised some method of measuring their progress such as competing with peers, counting number of lessons done compared with those remaining and/or calculating how much they had learned.
4. Do you think anyone cares about how you are doing?	Most students believed their instructors cared about how they were doing.
5. What strategies do you use to plan your time? Is it easy or difficult to plan time?	IM-G students generally used some time management strategies. About half of the IM-P students planned their time. None of the MF-G or MF-P students planned their time.
6. Do students care about doing well?	A majority of all students believed that other students wanted to do well in the course.
7. If you wanted to do better, what would you do?	A majority of all students indicated that they would "take more time."
8. What is the biggest problem students have with this course?	"Motivation" was mentioned by all students, although other problems such as reading comprehension and technical difficulty were also mentioned.

[a] IM-G = IM Course Good   MF-G = MF Course Good
IM-P = IM Course Poor   MF-P = MF Course Poor

13

TABLE 1 (Continued)

QUESTIONS	STUDENT RESPONSES
9. If you were advising a student just starting this course, what would you tell him/her to do or not do?	The majority of all students indicated they would suggest that new students "ask questions." "Good" students suggested that new students not listen to the rumors about how easy/difficult specific sections of the course were. "Poor" students suggested that new students take notes.
10. If you were in charge of this course, what changes would you make?	Students from each sub-group mentioned giving students an option of group-paced or self-paced instruction. Poor students expressed a desire for more introductory information.
11. How do you feel about having to reach performance objectives?	A majority of all students indicated that the standards were acceptable.
12. Was there a point in the course where you felt unmotivated or lost interest?	IM-G, IM-P all mentioned Block III.
13. How do you feel about the computer grading your tests and giving you the next assignment?	A majority of students liked the computer grading their tests and giving them the next assignment.
14. How do you feel about your instructors?	All students interviewed had very good comments about their instructors.
15. Tell me about your study habits?	Students in all sub-groups generally answered the embedded questions and took notes. Many IM-G, IM-P & MF-P students used the objectives to review for a test, whereas none of the MF-G students used this method. IM-G IM-P, & MF-P students, more often used the block review lesson than did MF-G students.

TABLE 1 (Continued)

QUESTIONS	STUDENT RESPONSES
16. How do you use the objectives?	A majority of all students read the objectives and many of them used the objectives to review for a test.
17. What motivates you to complete the course?	IM-P and IM-G students were most often motivated by pride. MF-G and MF-P students were most often motivated by external motivators such as "honor graduate" or "military career." Poor students in both courses were motivated by the realization that they were going home upon completion of the course.
18. How would you feel about having a target date set for you?	A majority of students thought a target date would be a good motivational tool for students.

III. Module Design and Development

Module Design

The Orientation/Time Management module was designed to address the conclusions drawn from the student interviews. Thus, this lesson explains the characteristics of a CMI environment, compares and contrasts these characteristics with a lock-step environment, details some of the behaviors of successful CMI students, explains the philosophy behind the SPMC, and provides students with rudimentary time management skills. Because of the problems some students had expressed about approaching their instructors, scheduled "progress counseling sessions" were created for the purpose of requiring students to periodically meet with their instructor to evaluate their progress. It was reasoned that by scheduling student-instructor meetings early in the course, students would quickly find out that they need not fear discussing their progress with their instructors.

For evaluation purposes, the Orientation/Time Management module was essentially the combination of two separate modules which could, if necessary, stand alone. Thus, the Orientation module, which had four objectives, served as the first part of this lesson and the Time Management module, which had three objectives, served as the second portion of this module.

Evaluation Instruments

The evaluation instruments for the Orientation/Time Management module consisted of two attitude questionnaires and a postlesson test. The questionnaire entitled Attitude Toward CMI was a pre/post measure and, as such, consisted of 10 Likert scale items focusing on the student's opinion of CMI. Item order was varied between the pre/post versions of the scale. The questionnaire, entitled Attitude Toward Time Management Module, consisted of 5 open-ended questions dealing with the student's opinion of the Time Management concept, the format of the module, and the lesson test (see Appendices).

The lesson test was designed to sample the student's knowledge and understanding of each of the 4 Orientation objectives and 3 Time Management objectives. Following formative evaluation revisions, the test consisted of 16 multiple-choice items and 2 performance questions designed to evaluate students' understanding of the correct procedures for creating and maintaining the Course Completion Map (see Appendix C).

Instructional Strategies and Procedures

The Orientation/Time Management module created 4 new learning center procedures. The first required the learning center instructor to periodically check the learning center roster to determine which students were either 2 days ahead or 2 days behind schedule and to initiate Progress Counseling Sessions with each of these individuals (the second new learning center procedure). In discussing the student's progress during the counseling session, the instructor was to assist fast students by helping them to establish a Goal Rate indicating the student's personal goal for completing the course. To assist slow students, the instructor could initiate a Performance Contract, an agreement between the student and instructor indicating that the student agreed to make up X number of days by a specific date. The instructor could also change a student's target rate if it was deemed appropriate.

The third new learning center procedure involved documentation of the progress counseling sessions. That is, all counseling sessions were to be recorded on the Military Form 84. This not only insured consistency when new instructors came into the learning center, but it also provided a method of determining the extent to which the procedures were being implemented. The fourth procedure required instructors to periodically check students' Course Completion Maps to insure that they were being completed accurately.

Formative evaluation results indicated that students needed a general guideline for pacing themselves through the course and thus, students were given a Time Sheet which listed the average time to complete each lesson of the course. A one-page summary of the Time Management module was printed on the reverse side of this handout. This summary defined the major concepts of the Time Management module and briefly described how to complete the Course Completion Map.

Finally, a one-page, readministerable summary of the Orientation module was provided. This summary was designed to be posted in each learning center to remind students of appropriate behaviors in a CMI learning environment, and as such, it outlined the major Orientation topics and listed the characteristics of efficient student behavior.

IV. Formative Evaluation

Formative evaluation activities for the Orientation/Time Management module were conducted in two steps: a formative evaluation of the Orientation module and a separate formative evaluation of the Time Management module. Both formative evaluations consisted of a small group tryout and an operational tryout. The small group tryouts consisted of one-to-one interviews in which the evaluator administered the module in question to various students and instructors. The primary concern during this phase was whether or not the module accurately and efficiently conveyed the desired information. During the operational tryout, the module was placed in the appropriate position in the course hierarchy and administered to all students in the course who met the criteria for being assigned that particular module. The primary consideration during this phase was what effect the module had upon student performance and attitudes. Although appropriate revisions were made following each phase, the operational tryouts were essentially a form of summative evaluation.

Orientation Module

Small group tryouts. Students and staff from the Inventory Management (IM) and the Materiel Facilities (MF) courses were interviewed for the small-group tryouts of the Orientation module. Although the students were told that they had been selected at random for these interviews, they were actually selected because they were members of one of four subgroups termed "experienced-good," "experienced-poor," "naive-good," or "naive-poor." "Experienced-good" students were those who had completed all but two blocks of their course, were at least 2 days ahead of their Target Completion Date, and had at least an 80% grade point average. "Experienced-poor" students were those who had completed all but two blocks of their course, were 2 days or more behind their Target Completion Date, and had a grade point average of less than 80%. "Naive-good" students were those who were still working in the first block of their course and were predicted to complete the course in less than the mean course completion time. "Naive-poor" students were those who were still working in the first block of their course and were predicted to take longer than the mean completion time to finish the course. All students were selected on the basis of records maintained by the AIS.

Students who were eliminated from their course and were still on base awaiting their next assignment were interviewed in the same manner as experienced students. Instructors and supervisors from both courses were also interviewed using the "experienced student" format. The difference in format between the "experienced" student interview and the "naive" student interview was basically one of specificity versus generality.

Seven students in each of the 4 categories (experienced-good, experienced-poor, naive-good, and naive-poor), 2 "eliminees," 8 instructors, and 4 supervisors were interviewed. Each interview lasted approximately 60 minutes, with about one-quarter of this time being devoted to the interviewee reading the Orientation module.

Results of the student and staff interviews are summarized in Table 2. Briefly, all the interviewees thought the material was clearly presented. The suggested changes included adding embedded questions, condensing the material, making the module a lesson in the course, and adding a page on the importance of asking questions. Also, some subjects discussed in the module needed clarification: (a) efficient note taking behavior, (b) the objective of study breaks; (c) the importance of a good mood to efficient studying; (d) efficient, problem-solving behavior; (e) the negative consequences of excessive self-criticism; and (f) the value of investing in a CMI system. During these small-group tryouts, the mean time to complete the Orientation module for all current students (as opposed to eliminees) was approximately 20 minutes with a range of 16.1 minutes for experienced-good students to 23.5 minutes for naive-poor students.

Based on the data derived from these interviews, the following changes were made to the Orientation module: (a) various sentences were shortened or reworded, (b) the role of instructors in a CMI environment was clarified, (c) the computer was described as an "instructional aid" rather than as a "learning device," (d) seven embedded questions were added, (e) several cartoons were modified, (f) a page was added on special recognition for outstanding students, (g) the explanation of efficient note-taking behaviors was clarified, (h) the objective of study breaks was clarified, (i) a page was added on the importance of a good mood to efficient study, (j) the explanation of efficient problem-solving behavior was clarified, (k) the negative consequences of excessive self-criticism were clarified, (l) the value of investing oneself in a CMI system was clarified, (m) the standards of military technical training were clarified, and (n) a page was added on the importance of asking questions.

Operational tryouts. The opportunity for operational tryout of the Orientation module was restricted to the PME course since operational evaluations of the Study Skills modules (another part of this project--see AFHRL-TR-79) were scheduled concurrently in the other 3 AIS courses. For approximately 6 weeks, data were collected on the times-to-complete and pre/post Attitude Toward CMI scale measures, using data from students who entered and completed PME Block 8 (the second CMI block in the course) during this period. To provide an evaluation of the relative effectiveness of an Orientation versus No-Orientation module condition, students were randomly assigned to Module 01 or Module 02, respectively, for this lesson. The Orientation module was placed as the first lesson in the Block 8 hierarchy.

At the completion of the evaluation period, data extracted for the criterion variables of interest revealed only 9 cases for Module 01 and

TABLE 2
STUDENT AND STAFF OPINIONS OF INITIAL ORIENTATION MODULE

QUESTIONS	RESPONSES
1. How do you feel about the cartoons in this module?	None of the interviewees expressed negative opinions of the cartoons.
2. Do you think the material was clearly presented?	All of the students and supervisors, and a majority of the instructors thought the material was clearly presented.
3. (Students only). Would you like to take other lessons that have the same method of presentation?	A majority of the students indicated that they would like to have other lessons presented in a similar manner. Several students noted that the lessons they had taken were similar in presentation.
4. If you were in charge of this course what changes would you make in this module?	Less than one-third of the interviewees recommended any changes to the module. Those changes which were suggested included adding embedded questions, condensing the material, making the module a lesson in the course and adding a page on the importance of asking questions.
5. How do you feel about the description of the computer?	Nearly all students thought the description of the computer was acceptable, whereas nearly half the staff felt that the computer should be called an "instructional aid" rather than an "instructional device."
6. Do instructors become students' friends?	A majority of all interviewees indicated that many students do become friends with their instructors.
7. Can you think of a better cartoon for this statement? (Statement about various types of student friendships available in a CMI environment.)	The most frequent suggestion was to put the cartoon figures in civilian, as opposed to military clothing, and to change the setting to a more informal situation. Other suggestions included increasing the number of cartoon figures and eliminating the reference to the Airman's Club.

TABLE 2 (Continued)

QUESTIONS	RESPONSES
8. How do you feel about the second paragraph on Page 15 (consequences of students not taking responsibility for their own learning)?	Most students and instructors liked this paragraph, but a majority of the supervisors thought it needed to be expanded.
9. (Naive students only). What is your general opinion of Section 3 (Typical Behavior of Efficient CMI Students)?	All of the naive students indicated that they liked this section.
9 - 20. (Instructors, supervisors and experienced students only). Let's go through Section 3 a page at a time and you can tell me your opinion of each page.	A majority of the experienced students, instructors & supervisors liked this section. Subjects needing clarification included efficient note-taking behavior, the objective of study breaks, importance of a good mood to efficient studying, efficient problem-solving behavior, negative consequences of excessive self-criticism, and the value of investing in a CMI system.
21. (Naive students only). Do you believe what Section 3 told you?	All of the naive-poor and a majority of the naive-good students believed what this section told them.
22. What is your opinion of Page 29 (Explanation of philosophy behind Time Management System)?	Most of the naive-poor students, experienced-good students, and all of the supervisors and eliminees found this page acceptable. A majority of the experienced-poor students and instructors and nearly half of the naive-good students disliked this page. The main objection was that how much money is being spent on student training was not a motivator for most students.
23. What is your opinion of Page 31 (Public School Education compared with Air Force Military Training)?	A majority of all the interviewees liked this discussion.

TABLE 2 (Continued)

QUESTIONS	RESPONSES
24. (Naive students only). How do you feel about getting a course completion rate and trying to reach it?	All of the naive-poor students and nearly half of the naive-good students liked this concept.

7 cases for Module 02. When time constraints were applied to these data to exclude those cases which were felt to be unreliable (unreasonable block completion times), the number of cases for Module 01 dropped to 4 and the number of cases for Module 02 dropped to 6. Analyses on both the constrained and unconstrained data revealed no reliable differences between the groups with respect to (a) times to complete the module, (b) times to complete the block, (c) block scores and (d) pre/post Attitude Toward CMI total and subscale scores; however, discussions with course instructors and staff indicated that the module was seen as being highly desirable and useful to students. In fact, shortly after this evaluation was completed, the PME course transitioned their entire course to a CMI format and installed the Orientation module at the beginning of the first block of the course.

Time Management Module

Small group tryouts. During the small-group tryouts of the Time Management module, the evaluator worked on a one-to-one basis with 2 sequential groups of students entering 1 learning center in the IM course. In addition to observing problems and soliciting comments while the students were working on the module, the evaluator administered the criterion test and the Attitude Toward Time Management Module questionnaire to all students. A total of 15 students in the first group and 27 students in the second group completed the module under these conditions.

The criterion test results for Group 1 indicated that students understood the material which was presented and that they were generally able to initiate a Course Completion Map, but they were often unsure of how to plot their daily progress. Thus, the module was revised to provide additional information and explanations to assist the student in understanding how to perform this function, and two additional questions were added to the criterion test to further evaluate the students' understanding of this area.

Attitude questionnaire results for Group 1 revealed that in almost all cases, students expressed positive feelings about the module and indicated that they thought that it would be of benefit to them. Mean time to complete the module (excluding the criterion test and the attitude questionnaire) was 36.3 minutes. The mean criterion test score was 89.3 percent.

Criterion test results from the second group, following the revisions, indicated that the addition of the 2 frames to the module, and the 2 criterion test questions to more thoroughly cover the daily plotting process, were beneficial. While one-third of the Group 1 students plotted their daily progress incorrectly, less than one-fourth of the Group 2 students had difficulty with this task.

The mean time to completion for the revised module was 57.1 minutes, a substantial increase over the 36.3 minutes for the initial module. The difference between these two times was attributed to the minor additions made to the module, the small n in both samples, and the fact that the second group of students appeared to be "slower" (i.e., had longer target course completion times) than the first group.

No revisions were made to the criterion test following the second small-group tryouts, and the revisions made to the module were mainly grammatical. The module was, at this point, considered to be a reasonably effective instructional tool and, thus, ready for an operational, large-scale tryout.

Operational tryouts. The Time Management module was installed as the first lesson in the first block of a special, formative evaluation version of the IM course. The module questionnaire was not administered since a standard Student Attitude Questionnaire was administered at the end of Block 1. During these tryouts, 64 students entered the evaluation version of the course and of these, 28 completed the first 4 blocks during the evaluation time period. The number completing the remaining 2 blocks of the course was too small for meaningful analysis.

First-attempt scores on the module criterion test had a mean of 88.3 percent. Only one student failed to meet the criterion of 60 percent correct. First attempt lesson times were found to be unreliable due to the lesson's position as the first assignment in the course. Administrative activities required at course entry were being charged against the lesson, and the lesson's position was later changed to avoid these timing errors.

Students' completion times and end-of-block test scores on the first 4 blocks were compared with those of a comparable group of students entering the course during the same period. Although none of the time or score differences was statistically significant, the results were considered promising, since the mean of the evaluation group's cumulative time for the 4 blocks was 3.75 hours less than that of the control group.

Eight items, considered likely to reflect attitude differences resulting from Progress Management and/or the Time Management module, were selected from the Student Attitude questionnaire administered at the end of the first block. As compared with the control group, the evaluation group's responses indicated that they felt more pressure to complete the course quickly and were less able to work at their own pace. They also perceived their interactions with the instructors to be less satisfactory than did the control group.

Thirteen evaluation group students were also interviewed. The most useful information derived from these interviews was that when students were asked how they felt about being required to complete the course as quickly as possible with minimal passing grades, it was found that many did not really understand this concept; students did not realize that they were supposed to complete the course as quickly as possible while maintaining only passing grades. Thus, it was necessary to explain this concept to them again. Generally, students did not like this compromise.

A number of revisions were made on the basis of the operational tryouts. The page detailing the differences between the goals of military technical training and those of public school education and the directions for a practice exercise on the Course Completion Map were rewritten to clarify their meaning. To assist students pace themselves, a handout, entitled the Time Sheet (see Appendix D), was prepared which listed average completion times for each lesson in the course, and a page explaining the use of the handout was added to the module. Summarized directions for plotting daily progress, reminders about scheduled Progress Counseling Sessions, and the definition of a "Goal Line" were printed on the back of the handout. Other than raising the criterion to 70 percent correct, no changes were made to the criterion test. A second, parallel form of the test was also developed.

V. Summative Evaluation

For the purposes of this project, summative evaluation was considered to be a second large-scale tryout in which data on approximately 50 students per treatment were collected. Given time and resource constraints, evaluation of the Orientation module was restricted to the formative evaluation activities described in Section IV of this report. The summative evaluation procedures employed and the results obtained for the Time Management module will, therefore, constitute the contents of this section.

Summative evaluation of the Time Management module was conducted in 2 phases. During Phase I, the complete AIS was undergoing an extensive evaluation (Integrated System Test) and the utility of the Progress Management component was a major consideration in this evaluation. The Time Management module had come to be considered an integral part of the Progress Management component, and thus, Phase I of the evaluation addressed the combined effects of Student Progress Management software and the Time Management module. Following completion of the Integrated System Test, Phase II of the evaluation addressed the effects of the Time Management module per se in the presence of the Student Progress Management software.

Phase I Evaluation Procedures and Results

Halfway through the Integrated System Test, the Student Progress Management software and the Time Management module were introduced. The "no progress management" period lasted a total of 57 class days. A comparable 57-class-day period was defined beginning with the implementation of the Progress Management software and Time Management module. Students who began the course and completed 1 or more blocks of the course during the no-management period constituted the control group, and students who began the course and completed 1 or more blocks of the course during the management period constituted the evaluation group.

Module performance data. The Time Management module was moved to the position of second lesson in the first block in order to avoid contamination of the timing data. After about a month, however, course management moved the first 2 lessons out of the first block and administered them as part of the preassessment day activities. Consequently, collection of module performance data was restricted to the first 20 class days of the evaluation period.

Mean first-attempt lesson time (based on the data of 106 students) was 87.6 minutes with a standard deviation of 21.6 minutes. Total first-attempt criterion test scores were available for 136 of the evaluation group students who also completed the first block of the course. For those students, the mean first-attempt criterion test score was 86.5. Nine students (6.6 percent) failed to meet the criterion of 70 percent correct.

Block completion time and score data. The question of primary interest during this evaluation concerned the hypothesized reduction of block and course completion times. The means and standard deviations of the block times and scores obtained prior to implementation of the Progress Management component (Control Group) and during the implementation of this component (Evaluation Group) are presented in Table 3. The time and score differences between the 2 groups and the percentage of time changes are also presented in this table. As can be seen, the mean completion time for Block 1 was 20.0 hours for the evaluation group as contrasted with a mean of 23.75 hours for the control group. This is a savings of 3.75 hours or 15.8 percent which is statistically significant. This is not, however, a clean comparison because of the changing content of the block: addition of the Time Management module at the start of the evaluation period and removal of both the module and the first lesson 3 weeks later.

Statistically significant time savings were also obtained in all but 1 (Block 4) of the remaining five blocks. While there is no obvious reason why Block 4 should be less susceptible to Progress Management, it may be that the "mid-course slump" was relatively impervious to the treatment.

For comparing total course completion times, only data from evaluation or control group students who completed all 6 blocks with reliable times were considered. A prolonged computer failure during the evaluation period rendered many of the evaluation group students' times unreliable and substantially reduced the available n. For the remaining 75 evaluation group students, the mean course completion time was 136.13 hours (22.69 six-hour days), a reduction of 17.20 hours (2.86 days) from the control group mean. Thus, there was a statistically significant reduction in total course completion time of 11.2 percent.

A reasonable question to ask is to what extent are block time reductions attributable to increased homework. The results showed that the percentage of lessons marked as homework actually declined from 8.57 percent for the control group to 4.00 percent for the evaluation group. Although at least part of this apparent reduction may have been due to changes in homework reporting procedures, there is no evidence that the block time reductions can be attributed to increased homework. Thus, the major factor contributing to the time reductions would appear to be increased student productivity during the normal shift.

Implementation of the SPMC was found to have a negative effect on first-attempt end-of-block test scores. As shown in Table 3, the evaluation group's block scores tended to be 2 to 4 percentage points lower than those of the control group and these differences were found to be statistically significant.

It can be argued that, in a criterion-referenced testing environment, a reduction in mean block scores is not necessarily undesirable if the test failure rate is not increased. The number of first-attempt

TABLE 3

BLOCK TIMES AND SCORES FOR PHASE I SUMMATIVE EVALUATION AND CONTROL GROUPS

	EVALUATION			CONTROL				
VARIABLE	N	$\bar{X}$	SD	N	$\bar{X}$	SD	EVALUATION - CONTROL	PERCENTAGE CHANGE
Block 1 Time[a]	300	20.00	6.93	276	23.75	8.12	- 3.75	-15.8
Block 2 Time	274	26.05	7.62	233	29.03	9.03	- 2.98	-10.3
Block 3 Time	246	34.10	9.55	190	39.50	11.68	- 5.40	-13.7
Block 4 Time	243	21.08	5.37	180	22.58	6.42	- 1.50	- 6.6
Block 5 Time	197	23.15	5.52	152	25.88	8.12	- 2.73	-10.5
Block 6 Time	196	16.23	4.32	174	18.92	3.63	- 2.69	-14.2
Total Time, Blocks 1-6	75	136.13	31.33	115	153.33	31.52	-17.20	-11.2
Block 1 Score[b]	359	80.3	10.8	280	82.5	10.3	- 2.2	
Block 2 Score	320	79.8	12.8	251	82.3	11.8	- 2.5	
Block 3 Score	304	74.1	11.3	208	77.6	10.2	- 3.5	
Block 4 Score	269	81.1	9.7	192	83.4	9.1	- 2.3	
Block 5 Score	233	76.7	14.6	163	80.9	10.1	- 4.2	
Block 6 Score	223	82.7	10.7	155	84.8	9.9	- 2.1	

a. Times shown in hours.
b. Scores shown as percentages.

block test failures in the evaluation and control groups were compared, and although the percentage of failures was consistently higher under the evaluation condition, the differences were statistically significant in only 2 of the 6 blocks: Blocks 1 and 3. It should be noted, however, that the total time students spent in a block, including any time spent in remediation following a block test failure, was, on the average, less than the time to complete the block prior to implementation of the Progress Management component.

Student attitude questionnaire data. The same 8 Student Attitude Questionnaire items used in formative evaluation were employed to evaluate attitude differences between the control and evaluation groups. In this case, data were available from both administrations of the questionnaire: following Block 1 and at the end of the course, following Block 6. The results indicated that the evaluation group's responses to the item, "I felt that I could work at my own pace," were significantly more negative than those of the control group at the end of Block 1, but the responses of the 2 groups were essentially equivalent at the end of the course. Additionally, items pertaining to students' perceptions of their instructors showed a slight positive shift for evaluation group students.

Phase II Evaluation Procedures and Results

In the second phase of summative evaluation, the effect of the Time Management module per se was evaluated in the IM course. Two versions of the course were defined: an evaluation version, containing the Time Management module as the student's first assignment after entering the learning center, and a control version in which students were given a placebo handout explaining the operation of the Student Progress Management software.

The evaluation and control versions of the course were each taught in 2 learning centers on each of 2 shifts. At the start of the evaluation period, all entering students were assigned to 1 of the 2 versions and it was intended that this procedure would continue for at least 2 months. Intervening events, however, prevented completion of the full evaluation plan and data collection lasted for approximately 25 class days.

Module performance data. Reliable lesson times were available for only 68 of the students who completed the first block of instruction. For these students, the mean first-attempt lesson time was 97.0 minutes. The mean percentages correct for the 2 forms of the criterion test were 74.5 and 68.8, respectively.

Block completion time and score data. A total of 79 evaluation and 79 control group students began and completed the first block of the course during the evaluation period. The number completing each successive block declined, with only 16 evaluation and 28 control group students completing the full 6 blocks of the course. Students who completed the latter blocks tended, of course, to be faster workers, regardless of treatment group.

The means and standard deviations of the evaluation and control group block completion times and the raw and percentage differences between groups are shown in Table 4. Since so few students completed the full course during the evaluation period, cumulative times are also shown for students completing the third, fourth, fifth, and sixth blocks.

As shown in Table 4, reliable Block 1 completion times were available for 77 evaluation group students and 76 control group students. The adjusted mean block time for the evaluation group was 19.51 hours, not significantly different from the mean (19.54 hours) of the control group. This indicates that evaluation group students had regained the time required for the Time Management module itself by the end of the first block.

For Blocks 2 and 3, the mean block completion times of the evaluation group were approximately 9 percent shorter than those of the control group, and for Blocks 4 and 5, the comparisons indicate an even larger times savings of almost 15 percent. Although the comparisons in Blocks 2 and 3 were not statistically significant, those for Blocks 4 and 5 were statistically significant. The apparent time savings attributable to the module in the sixth block exceeded 20 percent, but the number of students completing this block with reliable times was so small as to make the comparison suspect.

Cumulative times were obtained for those students who had reliable block completion times on the first through third, fourth, fifth, and sixth blocks. These values are shown on the lower half of Table 4. Although several of the comparisons failed to achieve statistical significance, the consistency with which the control group means exceeded those of the evaluation group strongly suggests that the Time Management module did indeed have the effect of decreasing block completion times.

A comparison of the means and standard deviations of the 6 end-of-block test scores indicated that there were no statistically significant differences. Thus, it can be concluded that the time savings attributable to the Time Management module were not achieved at the cost of increased block test failures.

Comparing the means of these criterion test scores with those obtained during Phase I of the evaluation suggests that the negative effects observed when the SPMC was first implemented were only temporary. The mean score of the Phase I control group (prior to implementation of the SPMC) was 81.92 while that of the Phase I evaluation group was 79.12. The mean of the Phase II evaluation group was 81.95. Thus, the mean criterion test score returned to the level observed prior to imple-

TABLE 4

BLOCK TIMES FOR PHASE II
SUMMATIVE EVALUATION AND CONTROL GROUPS

VARIABLE	EVALUATION N	EVALUATION $\overline{X}$	EVALUATION SD	CONTROL N	CONTROL $\overline{X}$	CONTROL SD	EVALUATION - CONTROL	PERCENTAGE CHANGE
Block 1 Time[a]	77	19.51	6.23	76	19.54	6.29	- 0.03	- 0.15
Block 2 Time	59	23.77	7.52	66	26.10	7.93	- 2.33	- 8.93
Block 3 Time	39	32.11	10.26	62	35.39	11.01	- 3.28	- 9.27
Block 4 Time	28	18.45	5.76	48	21.70	5.64	- 3.25	-14.98
Block 5 Time	20	19.01	5.91	36	22.36	5.96	- 3.35	-14.98
Block 6 Time	16	11.75	2.63	27	15.12	4.72	- 3.37	-22.29
Total Time, Blocks 1-3	34	74.11	23.13	53	78.26	21.77	- 4.15	- 5.30
Blocks 1-4	21	86.10	24.64	38	95.54	25.23	- 9.44	- 9.88
Blocks 1-5	13	95.19	26.69	25	108.94	25.52	-13.75	-12.62
Blocks 1-6	10	101.22	18.23	19	118.76	23.64	-17.54	-14.77

a. Times, in hours, adjusted for differences in predicted course completion time.

mentation of Progress Management.

Student attitude questionnaire data. The same 8 Student Attitude Questionnaire items were again employed to evaluate differences in attitudes attributable to the Time Management module. Two of these items demonstrated statistically significant differences between the control group and the evaluation group: The evaluation group students more strongly disagreed with the statement, "Since Denver was such a nice area, I was not in any hurry to finish the course," than did control group students but only on the first (Block 1) administration of the scale. The only other item which differentiated the groups was the end-of-course administration of the statement, "The instructors helped me and encouraged me to do well," on which the responses of the evaluation group were more positive than those of the control.

Soon after the SPMC had been implemented, 20 items dealing specifically with this component were added to the Student Attitude Questionnaire. A comparison of the evaluation and control group student responses to these items indicated that only 2 of the 40 comparisons were statistically significant: Evaluation group students more strongly agreed with the statement, "It was difficult concentrating when I knew I was behind (target)," than did control group students on both the Block 1 and end-of-course administrations of the questionnaire. This result could be interpreted in either of two ways. The Time Management module, and particularly the Course Completion Map, may have indeed increased students' anxiety when they were behind target, or it may simply be that the control group students attached little importance to the target rate.

VI. Discussion and Conclusions

As discussed previously, the Orientation module was subjected to an extensive formative evaluation with both students and instructors in the AIS environment and was administered to a number of students in the PME course in an Orientation/No Orientation design operational tryout. Due to small student flow during this later evaluation period, no reliable differences were found between the block times, block scores, or attitudes toward CMI for those students who received and did not receive the Orientation module. The average time which students spent to complete the module was, however, only 42 minutes, suggesting that the time for such an orientation is not excessive and that subsequent evaluations of the module could well be expected to reveal student performance or attitude benefits which are well worth this minor investment of student time.

Following formative evaluation and revision, the effectiveness of the Time Management module was assessed in 2 phases. In the first phase, the question of interest was whether the combination of Time Management skill training and progress targeting and feedback (Student Progress Management software) would result in significant reductions in block and course completion times.

There is little doubt that the combination of the Time Management module and Student Progress Management software did result in substantive time savings--an 11.2 percent reduction in the time required for students to complete the 6 blocks of the IM course. This 11.2 percent savings represented 2.87 fewer days spent in a learning center by the average student. Since the normal IM course entry rate is 60 students per week for 50 training weeks per year, the total yearly savings amounts to 8,600 student training days.

It is also clear that the Time Management module per se, in the presence of the Student Progress Management software, contributed significantly to training time reductions. Disregarding the first block, which is confounded by the presence of the module itself, the comparisons made in the second and third blocks, both based on reasonably large n's, probably provide the most reliable estimate of time savings attributable to the module--on the order of 9 percent. This is important as it demonstrates that the Time Management module increases the amount of time saved by the Student Progress Management software.

It is also of interest to assess the time savings which can be attributed to the continued presence of the Progress Management component over time. As indicated in Table 5, introduction of the Progress Management component resulted in a 12.2 percent reduction in these blocks as measured during the Phase I evaluation. There is no available measure of the immediate effect of the Management software by itself. The module, in the presence of the Management software, contributed a 9.1 percent time reduction as measured during Phase II. Approximately 4

TABLE 5

TIME SAVINGS IN BLOCKS 2 AND 3 ATTRIBUTABLE TO VARIOUS TREATMENTS

Treatment	Data Source	Time Difference in Hours	Percentage Time Savings
Management Software plus Module	Phase I Control Minus Phase I Evaluation	8.38	12.2
Management Software Only	Not Available	--	--
Module Only	Phase II Control minus Phase II Evaluation	5.61	9.1
Management Software plus Module over time	Phase I Evaluation - minus Phase II Evaluation	4.27	7.1
Management Software plus Module plus effects of time	Phase I Control minus Phase II Evaluation	12.65	18.5
Management Software plus effects of time	Phase I Control minus Phase II Control	7.04	10.3
Module plus effects of time	Not Available	--	--

months elapsed between the end of Phase I and the beginning of Phase II, and a comparison of the Phase I and II evaluation groups indicates that the combined effect of Management software plus module resulted in an additional 4.27 hour reduction (7.1 percent) in these blocks during this period. Thus, the total effect of the full SPMC after a period of time, was an 18.5 percent reduction in completion times for these two blocks. The final available comparison implies that the Management software, by itself, would have resulted in a 10.3 percent savings given time to have its full effect. This is probably an overestimate, however, since both the Management software and the module were in effect during the intervening period.

Two major implications can be drawn from these results. First, both parts of the total SPMC contribute to improvements in student efficiency and, interpolating from the values presented in Table 5, the contributions of each appear to be roughly equivalent. Second, the effects of the total Progress Management component continued to increase over time.

Implementation Recommendations

Given the results of this study, it is the authors' recommendation that the Orientation/Time Management module be implemented near the beginning of CMI technical training courses to improve student efficiency and attitudes.

Appendices

This section consists of the Orientation/Time Management module, the Course Completion Map, the Time Sheet, the Orientation Summary, and the two forms of the criterion test. These materials represent the final product of this evaluation and are presently being used in some capacity in all AIS courses.

APPENDIX A

ORIENTATION/TIME MANAGEMENT LESSON

HOW TO BE A SUCCESSFUL STUDENT IN A COMPUTER-MANAGED INSTRUCTIONAL (CMI) SYSTEM

OR

NOW YOU ARE RESPONSIBLE FOR WHAT YOU LEARN

What you will be able to do when you finish this lesson (the OBJECTIVES of this lesson are):

1. You will be able to recognize the major differences between a computer-managed, instructional system (like the one you are about to enter) and a group-paced, instructional system (like high school).
2. You will be able to recognize the benefits and features of a computer-managed, instructional system that help you be responsible for what you learn.
3. You will be able to recognize how an efficient student is different from an inefficient student in a computer-managed, instructional system.
4. You will be able to identify good techniques for managing your time.

OVERVIEW

There are 2 parts to this lesson. Part I is entitled "How To Be A Successful Student In A Computer-Managed, Instructional System" and it has 4 sections. Section 1 compares a Computer Managed Instructional System with a group-paced, instructional system. Section 2 describes skills required of students in a CMI system and the benefits of such a system, and Section 3 describes the typical behavior of efficient CMI students. Section 4 identifies good time management techniques.

Part 2 is entitled "Time Management in a Computer Managed, Individualized Course." This part explains how each student is given a specific number of days to complete the course based on his or her potential. Part 2 also explains how students should manage their study time so as to complete the course on schedule.

SECTION 1

COMPARISON OF A CMI SYSTEM WITH A GROUP-PACED INSTRUCTIONAL SYSTEM

The fact that you are a member of the United States military means that you have probably finished high school and may have attended a college or university. This means that you are an experienced student and know how to act in an educational setting.

As an experienced student, you also know that all educational settings have some things in common. For example, they all have teachers, students and some kind of learning material. They all take place in a certain location. They all require students to learn certain facts or principles and they all use some kind of grading standards to measure a student's ability to remember these facts or principles.

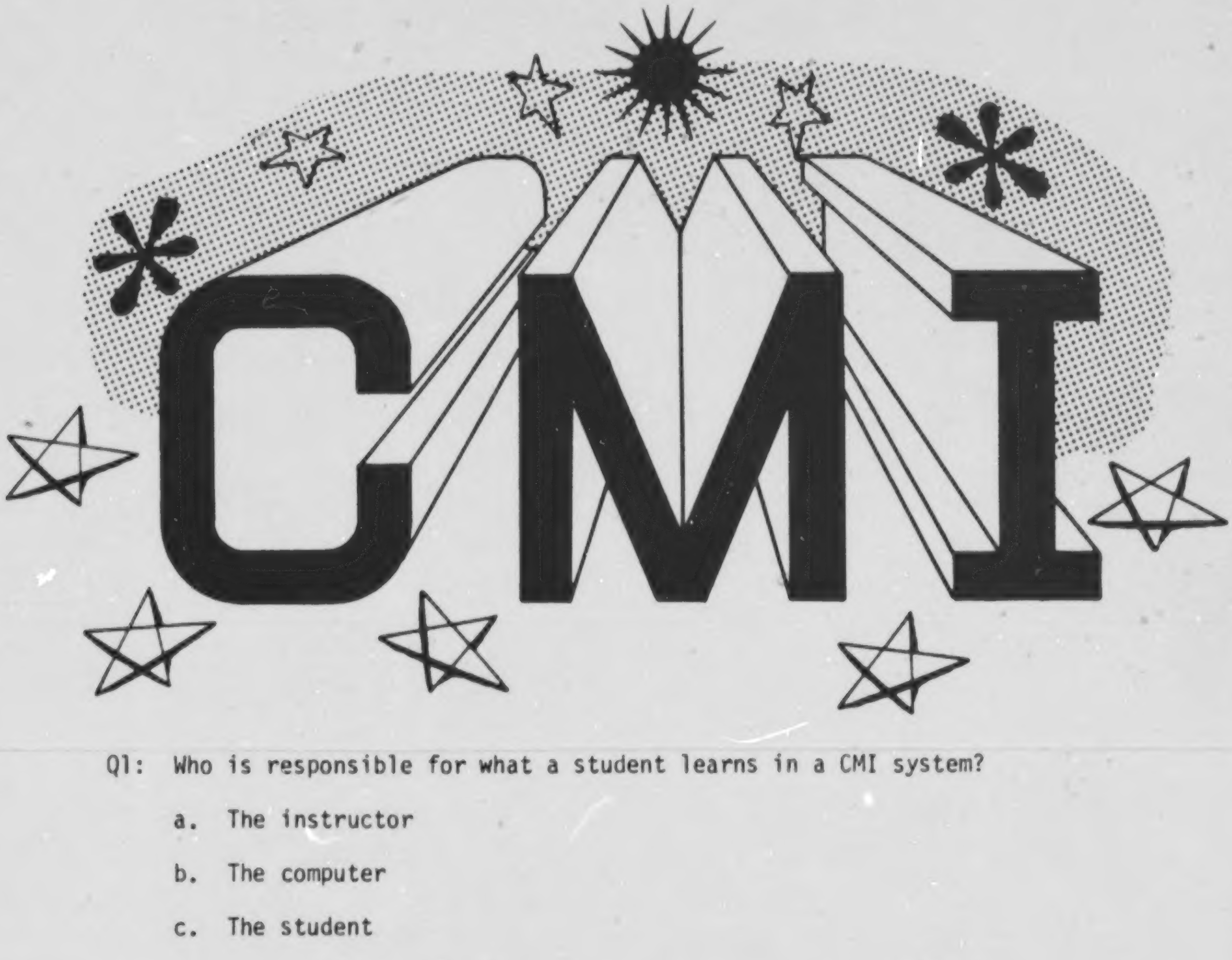
The military training which you are about to receive has all of these things, but since you are moving into a more advanced level of training, many of them will be a little different than what you are used to. You will be learning in a new way--in a computer-managed, instructional system, and you will, therefore, need to (1) learn about this system, and (2) get some skills for working efficiently in this system.

INFORMATION ABOUT A CMI SYSTEM

A computer-managed instructional system (called CMI for short) is a new way of teaching people information. It is also an exciting system because it is based on the idea that, if given the chance, students can learn more efficiently by themselves than they can in a group.

That is, you have the potential to improve yourself. You know more about your study habits and skills than anyone else, so we are going to give you the responsibility to act on this information and potential and learn the course material on your own. We are betting that you will be a more efficient student working in a CMI system than you would be in a group-paced system.

In other words, CMI is a new educational method which gives the student the responsibility for learning.



Q1: Who is responsible for what a student learns in a CMI system?

a. The instructor

b. The computer

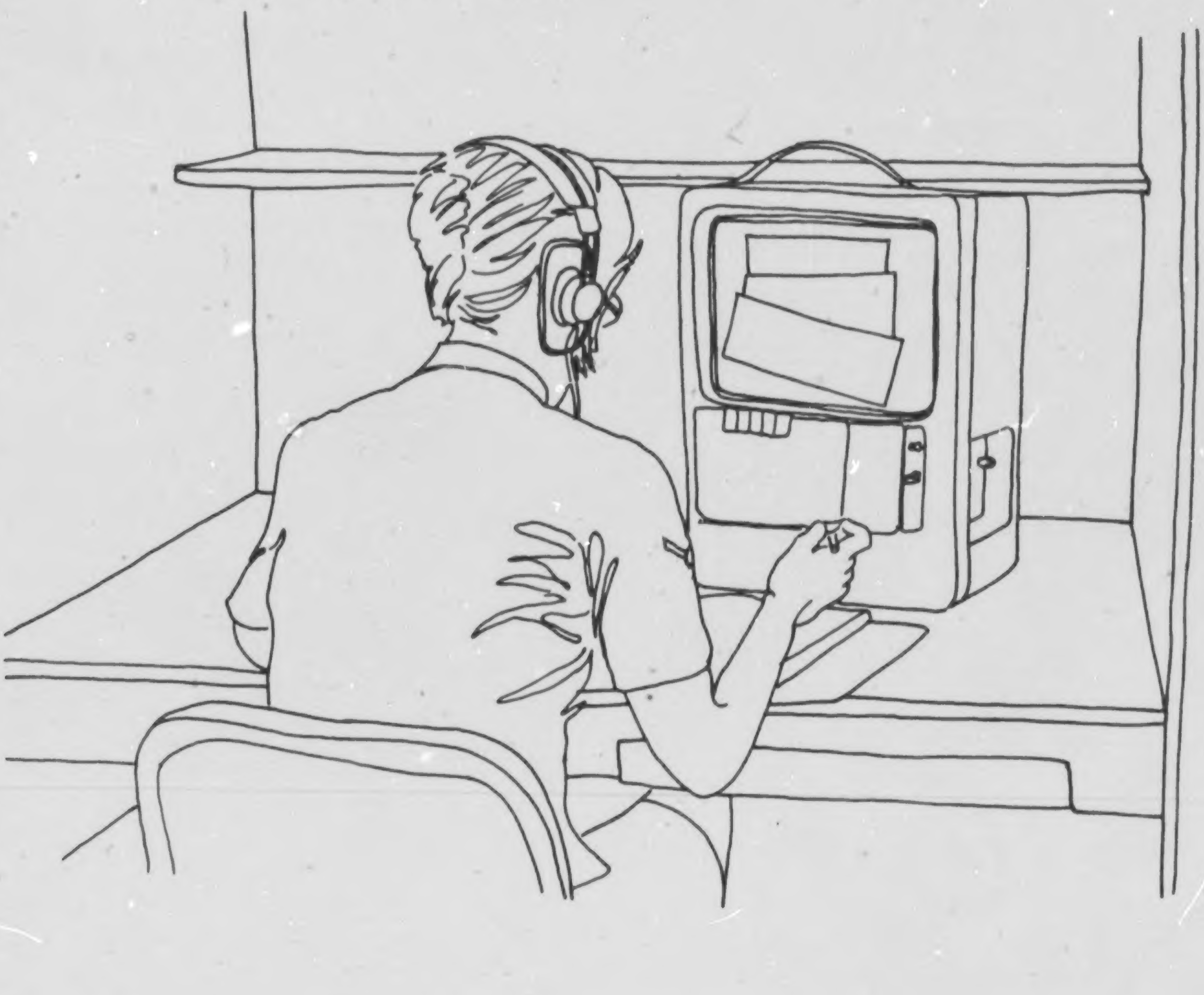
c. The student

Since you are responsible for what you learn in this course, an individual study area has been built for you. This study area is called a "carrel," and it is designed to increase your privacy. A carrel is really a jazzed-up desk.

Your carrel is located in a room called a learning center. A learning center is like a classroom in a group-paced system. Unlike a group-paced classroom, however, a learning center has several instructors, and all the students are working on their own. The main task of these instructors is not to teach you but to help you learn the course material by giving you personal attention and answering your questions.

REMEMBER: You are responsible for what you learn.

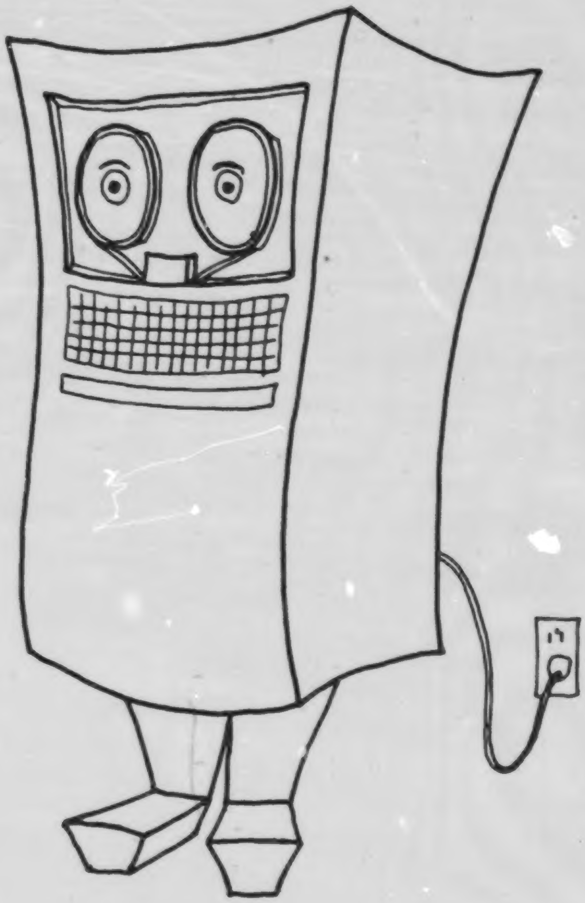
There may be times in the course when you will be given different learning materials such as a filmstrip and projector. These devices give you a way to learn other than by reading printed material. Many students find them a welcome change of pace.



The computer is another instructional device. Part of the computer equipment - the management terminal - will grade your tests, give you your next assignment, and tell you how you are progressing in the course. Its purpose is to free your instructors of routine jobs so they have more time to help you.

Most students find it very easy to use the management terminals. All you have to do is put your completed answer sheet face down on the glass section of the management terminal and press the READ button. After you do this, the terminal will print out a prescription which tells you which questions you missed, which objectives you failed and whether or not you passed the lesson. It will also give you your next assignment.

The computer and its equipment may seem fancy, but it is really just a big, expensive, adding machine-typewriter. It is also like a typewriter in that it has no favorites. It can only do what people have told it to do.



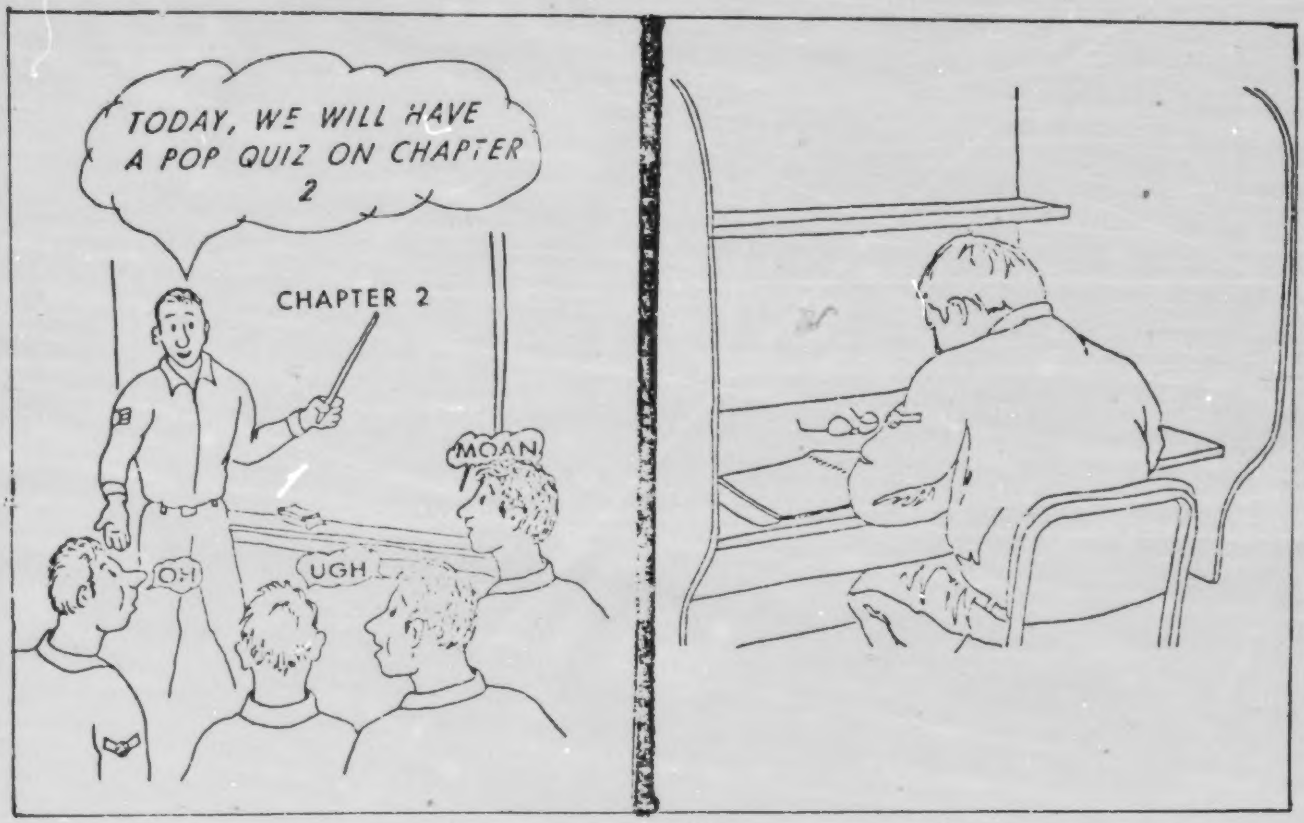
ADVANTAGES OF AND SKILLS REQUIRED IN A COMPUTER-MANAGED INSTRUCTIONAL SYSTEM

The main skill required of a student in a CMI system is responsibility.

That is, You decide how much time to spend on lessons depending on how difficult they are for you, not, as in group-paced, when the instructor finishes the lecture.

You decide when you are ready to be tested over material, not when the instructor schedules an exam.

You decide how quickly you can complete the course instead of completing the course when the instructor finishes the lectures.


TODAY, WE WILL HAVE A POP QUIZ ON CHAPTER 2
CHAPTER 2
MOAN
OH
UGH

Q2: What is the main skill required of a student in a CMI system?

- a. Note taking
- b. Responsibility
- c. Test-taking
- d. Above average intelligence

A CMI system doesn't, however, leave you completely on your own. For example, in order to help you identify when you are ready to take a test, this course has 2 self-helps: (1) lesson objectives, and (2) quizzes.

Objectives tell you what information or skills you should have when you complete the assigned lesson. Since you will probably never see the instructors who wrote the lessons, objectives are used to tell you what the instructors want you to learn. Fortunately, reading objectives is a lot easier than listening to what instructors say they want and then trying to figure out what they really want and what they will settle for.

By telling you what you should be learning from the lesson, the objectives give you a guide to use in studying. When preparing for a test, change the objectives into question form. After answering these questions, you can check your answers by looking back through the lesson. This is similar to what the authors did to create the questions for the test.

OBJECTIVE: You will be able to identify the name of the base to which you are presently assigned.

QUESTION FORM: You are presently assigned to what base?

a. El Toro
b. Lowry
c. Ft. Carson
d. Ellsworth

Quizzes are the second self-help which this course offers you. In a CMI system, the student has the advantage of preparing for the tests that count by taking tests that don't count.

That is, in this course there is a quizz after almost every lesson. Although you have to pass each quizz, your score on it does not count in your final course grade average.

These tests are designed to help you determine if you are understanding the course material.

*SELF TEST
BLOCK TEST
MASTERY TEST

Q3: What are the 2 kinds of self-helps available for CMI students?

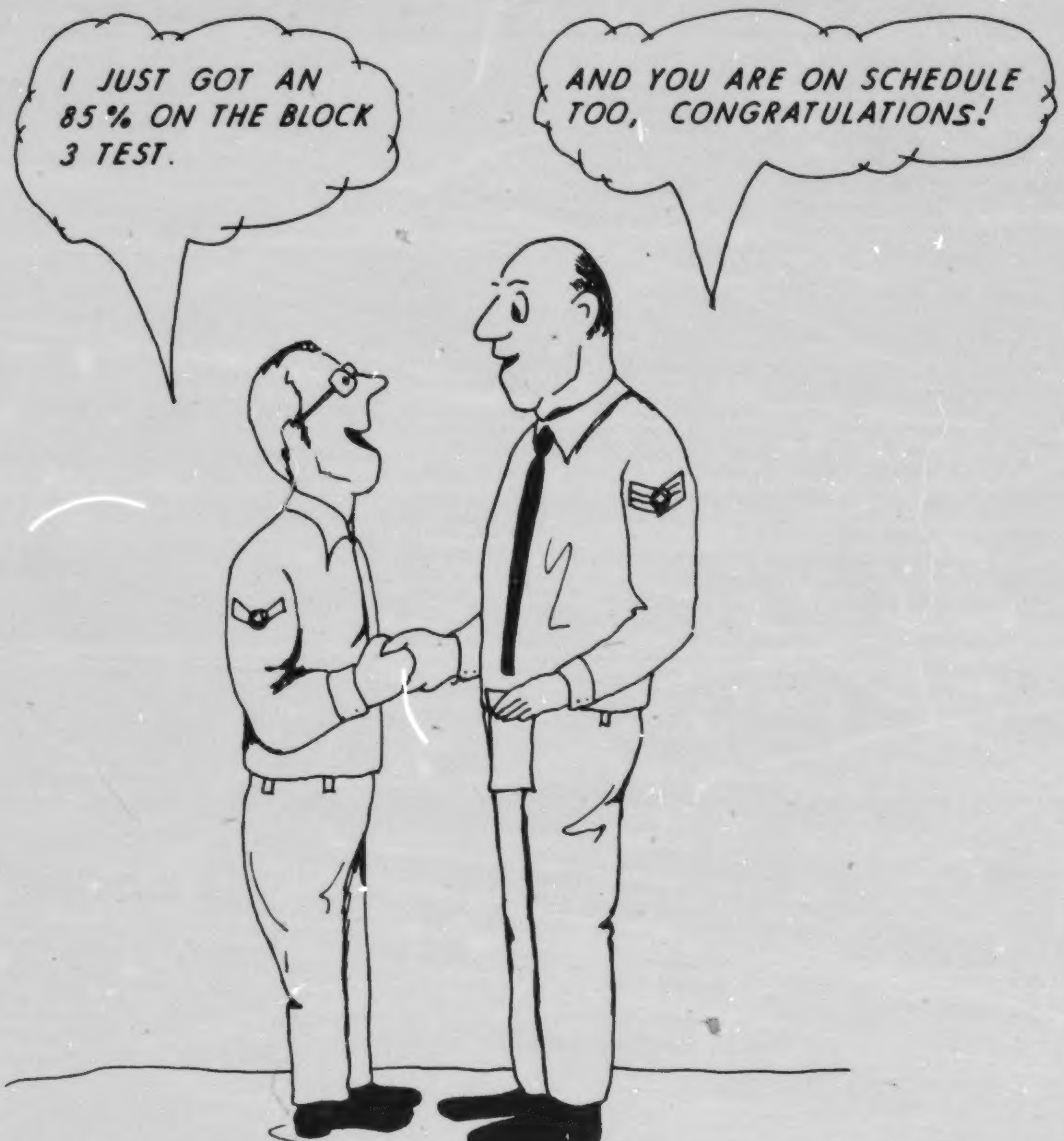
a. Lesson objectives and quizzes

b. Quizzes and Block tests

c. Block tests and Lesson objectives

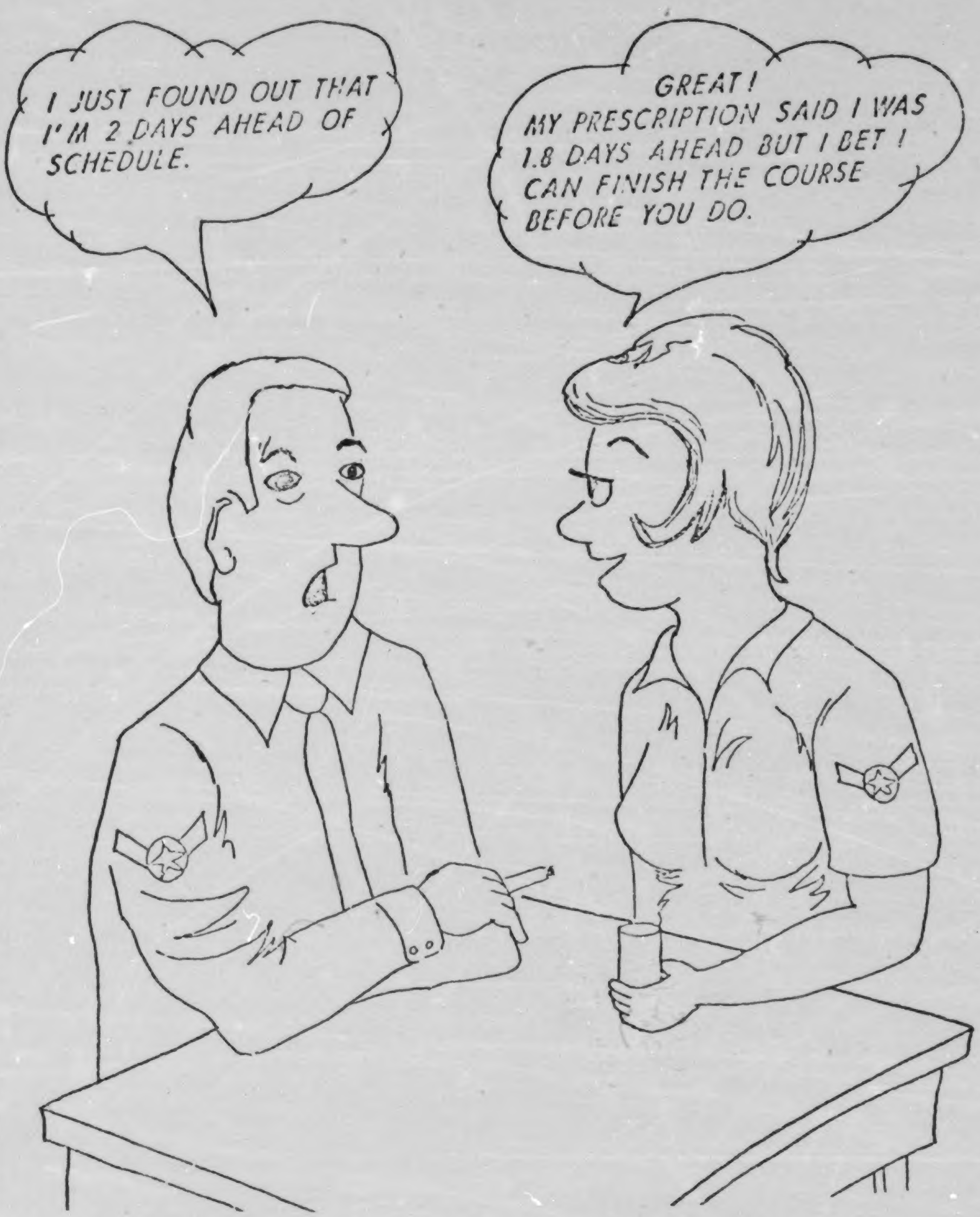
Since CMI students are responsible for their own learning, each student in your learning center will be working on his or her own and the instructors are there mainly to give you individual attention instead of lecturing. That is, the goal of CMI students is to learn--not to be taught. Your instructors will therefore be guided by the questions which you ask.

In other words, your instructors are in the learning center to help you with your problems, answer your questions, encourage you and counsel you. Some of them may become your good friends during this course.

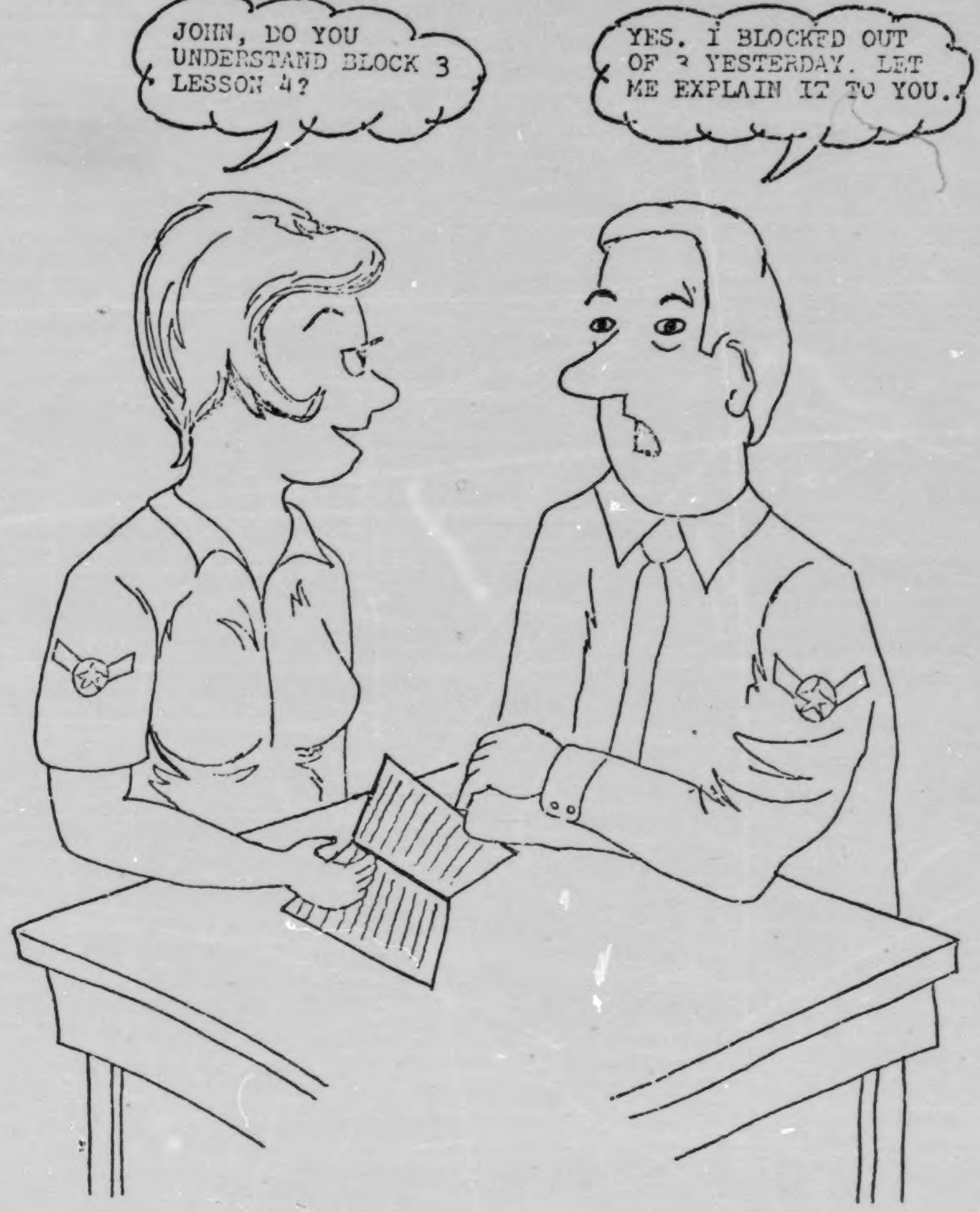

I JUST GOT AN 85% ON THE BLOCK 3 TEST.
AND YOU ARE ON SCHEDULE TOO, CONGRATULATIONS!

All of this may seem to say that you will have little or no contact with other students. WRONG! There are a variety of enjoyable student relationships possible in this system.

You may wish to compete with other students or with the calendar in reaching your goals as fast as possible.

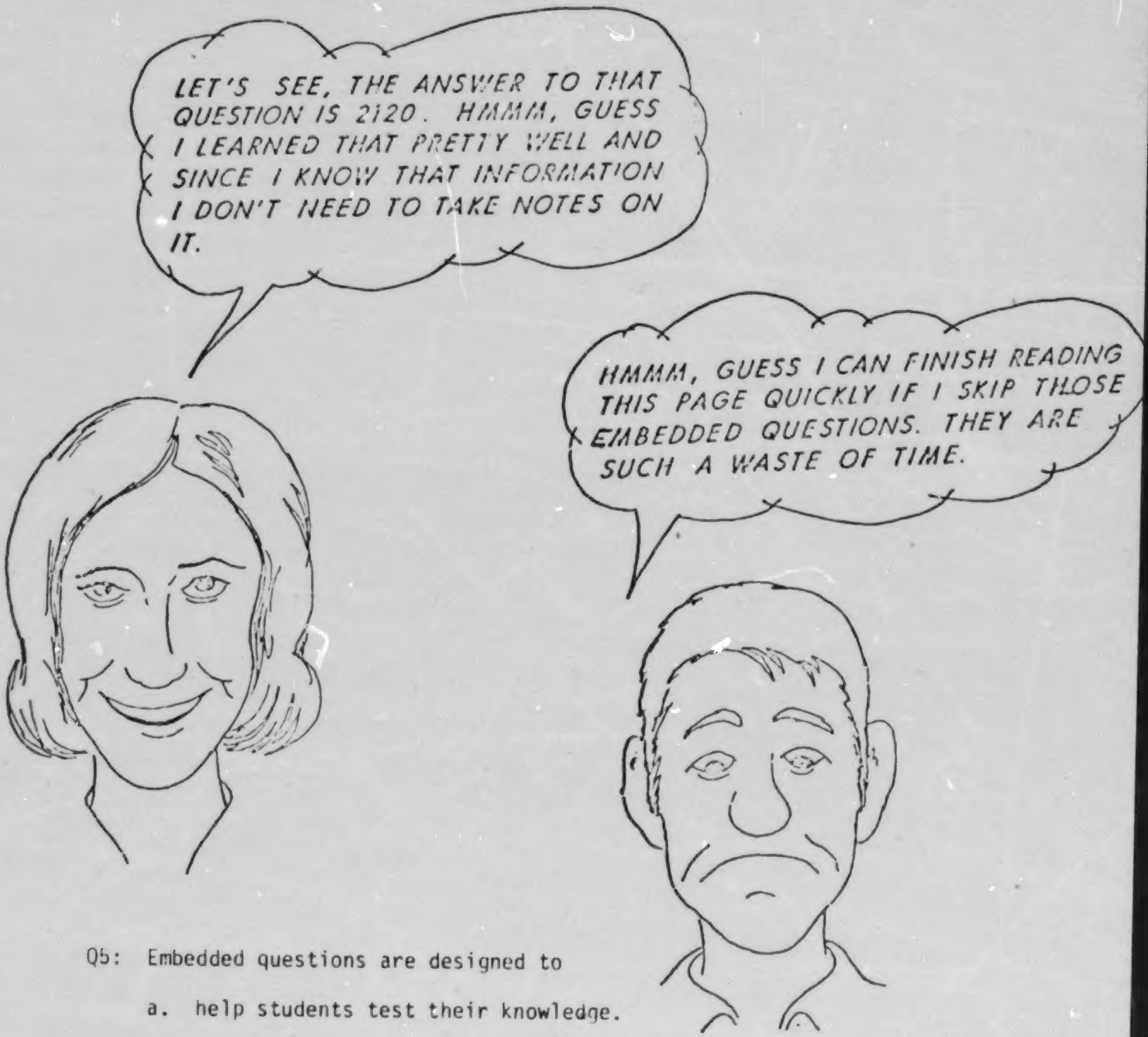

I JUST FOUND OUT THAT I'M 2 DAYS AHEAD OF SCHEDULE.
GREAT! MY PRESCRIPTION SAID I WAS 1.8 DAYS AHEAD BUT I BET I CAN FINISH THE COURSE BEFORE YOU DO.

You may want to work with other students, sharing information and tips on how to best meet your personal or course goals, solve your problems, or understand difficult material.


JOHN, DO YOU UNDERSTAND BLOCK 3 LESSON 4?
YES. I BLOCKED OUT OF 3 YESTERDAY. LET ME EXPLAIN IT TO YOU.

Some lessons contain questions designed to test the student's understanding of the information being presented. Efficient students use these embedded questions to test if they have been concentrating on the material.

Inefficient students tend to ignore these embedded questions. They don't take advantage of these learning tools.


LET'S SEE, THE ANSWER TO THAT QUESTION IS 2120. HMMM, GUESS I LEARNED THAT PRETTY WELL AND SINCE I KNOW THAT INFORMATION I DON'T NEED TO TAKE NOTES ON IT.
HMMM, GUESS I CAN FINISH READING THIS PAGE QUICKLY IF I SKIP THOSE EMBEDDED QUESTIONS. THEY ARE SUCH A WASTE OF TIME.

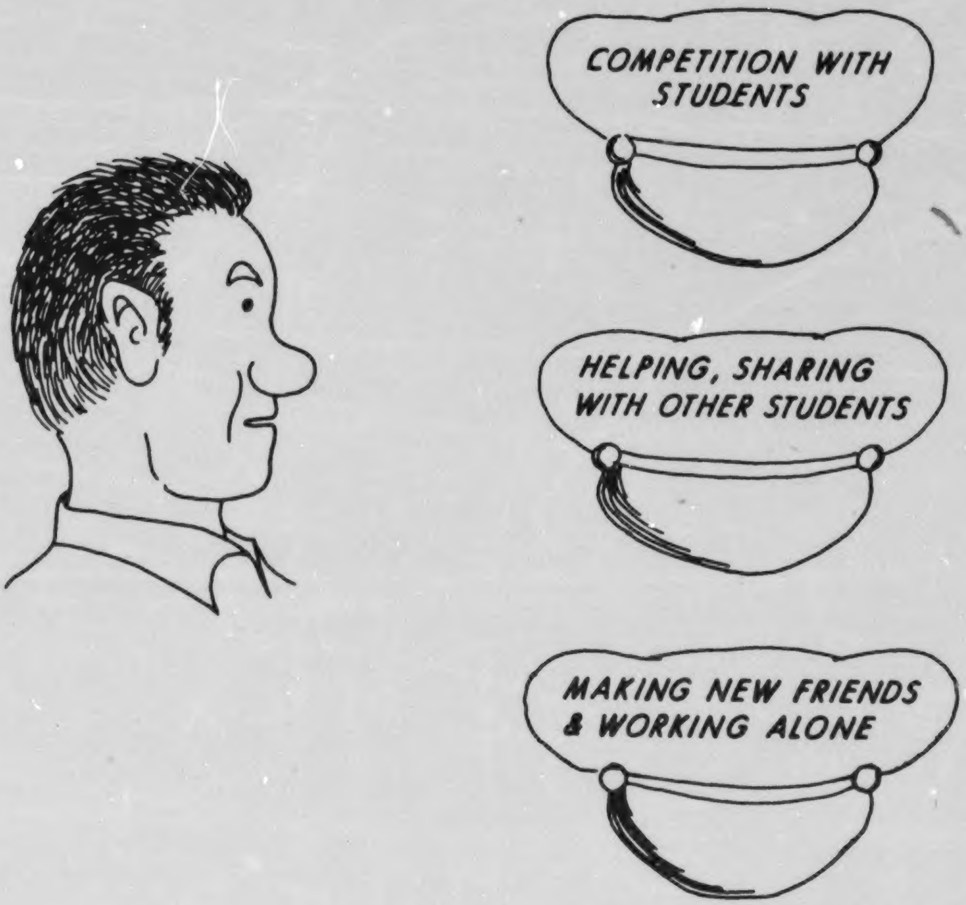
Q5: Embedded questions are designed to

a. help students test their knowledge.

b. help students take notes.

c. help instructors test students.

Any or all of these student relationships may fit you, so try each of them to see which ones you like best. One, two or all 3 of them may be good for you. Remember, you don't have to compete with other students, like you did in a group-paced system if you don't want to.

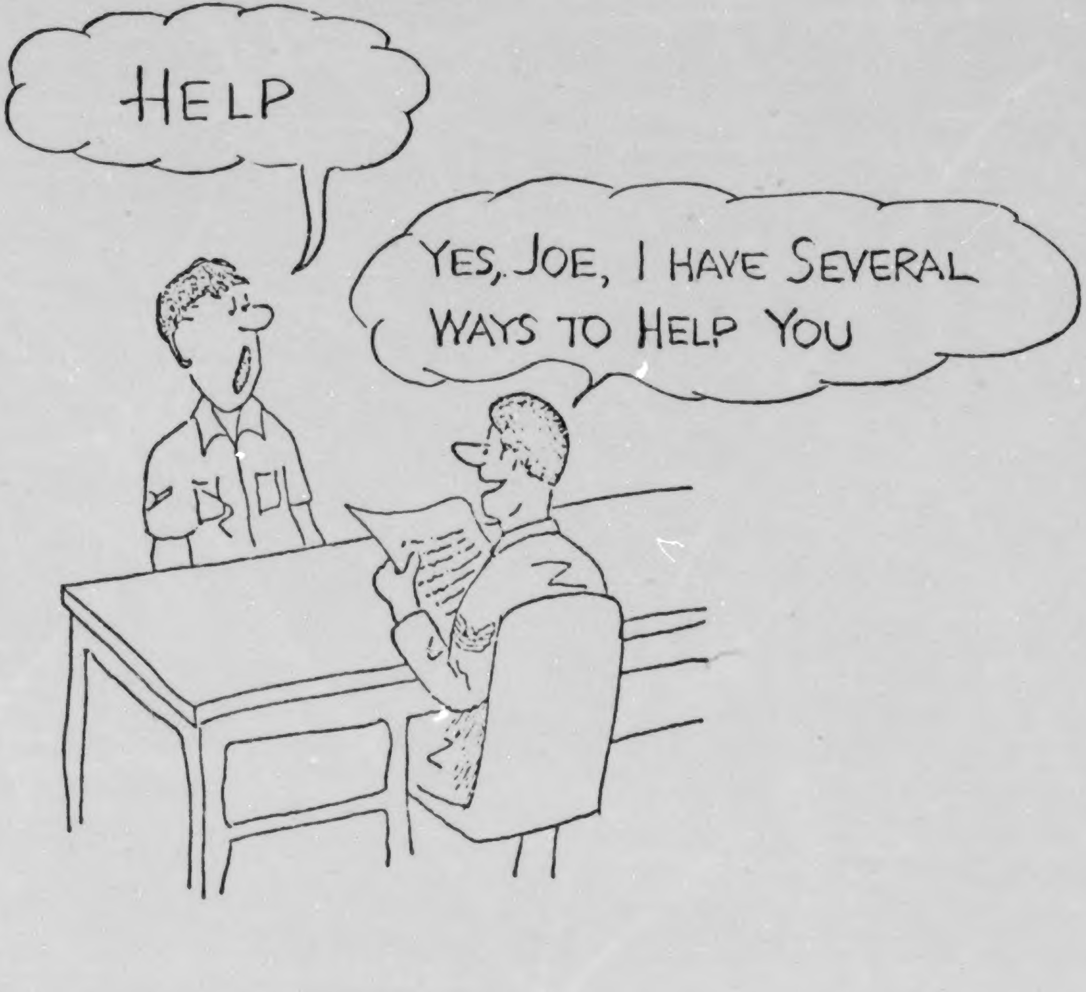

COMPETITION WITH STUDENTS
HELPING, SHARING WITH OTHER STUDENTS
MAKING NEW FRIENDS & WORKING ALONE

WHICH ONE FITS ME ?

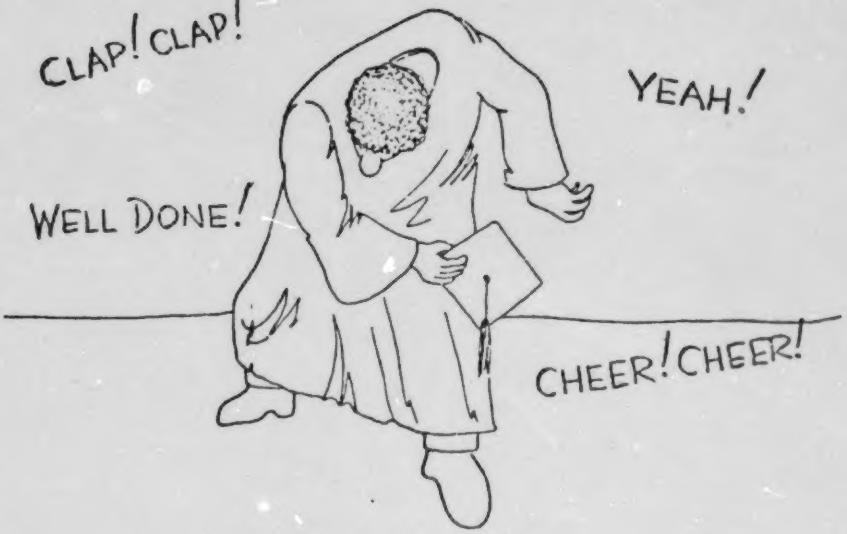
As you can see, CMI requires you to take more responsibility for your learning than you may have ever taken in the past. You will have to make decisions about when to ask questions, when to take tests, how much to study, and how to use the materials. In a group-paced system, you might not be given this much of a chance to use your own judgement and self-discipline.

Unfortunately, some students do not want to take responsibility for learning. That just doesn't work in CMI, so special incentives such as supervised or remedial study sessions, will be assigned to students who do not take their responsibilities seriously.

In other words, CMI exists to help you be a responsible student. Your instructors can provide advice, check out decisions, answer questions, and advise you about effective study and test-taking methods. Instructors want to help you but they do not have ESP! So, if you are having a problem you must TAKE ACTION and ask for help.


HELP
YES, JOE, I HAVE SEVERAL WAYS TO HELP YOU

Some students put a lot into a CMI system and they are rewarded for this with special recognition awards. If you are interested in working for such an award, ask your instructor for details.

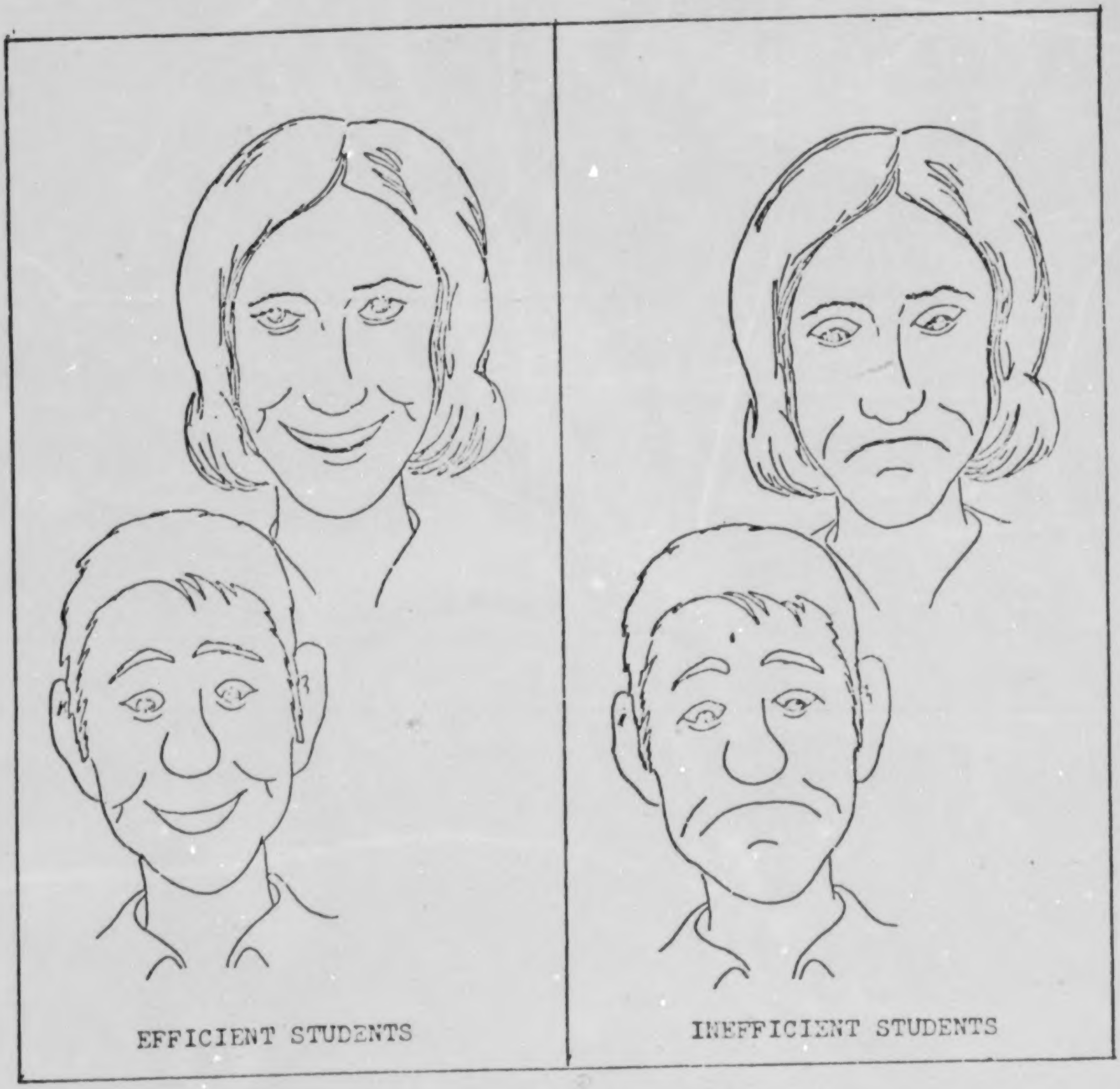

CLAP! CLAP!
YEAH!
WELL DONE!
CHEER! CHEER!

Q4. The goal of CMI students is

- a. to be taught course material.
- b. to memorize course material.
- c. to learn the course material.

Section 3: Typical Behavior of Efficient CMI students.

By now, it should be clear that this system requires a lot of you in terms of self-discipline and self-direction, but you probably are still a bit uncertain as to exactly how you are to become an efficient student. This section will tell you what efficient students do and how they act in a CMI system.

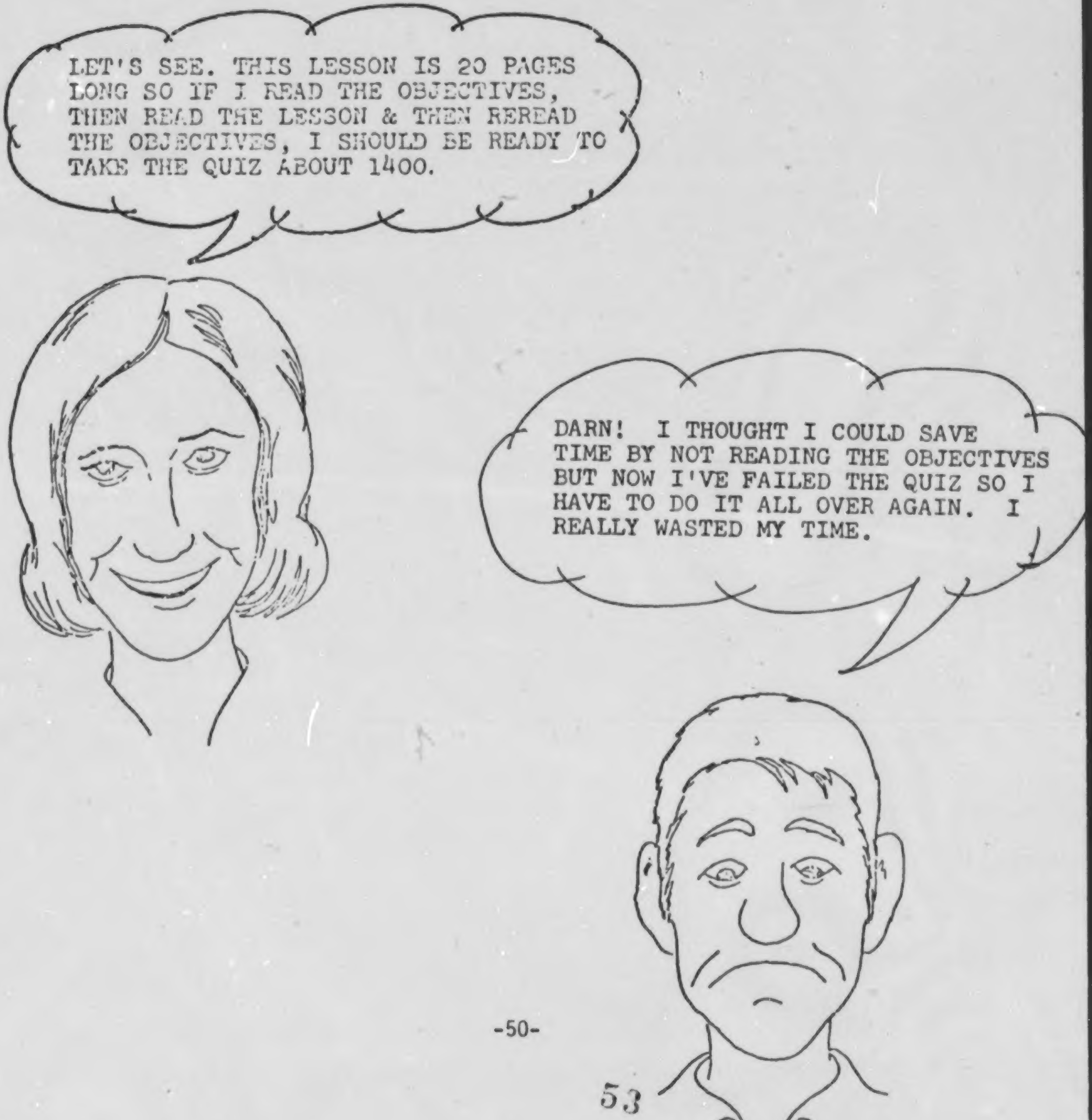


EFFICIENT STUDENTS

INEFFICIENT STUDENTS

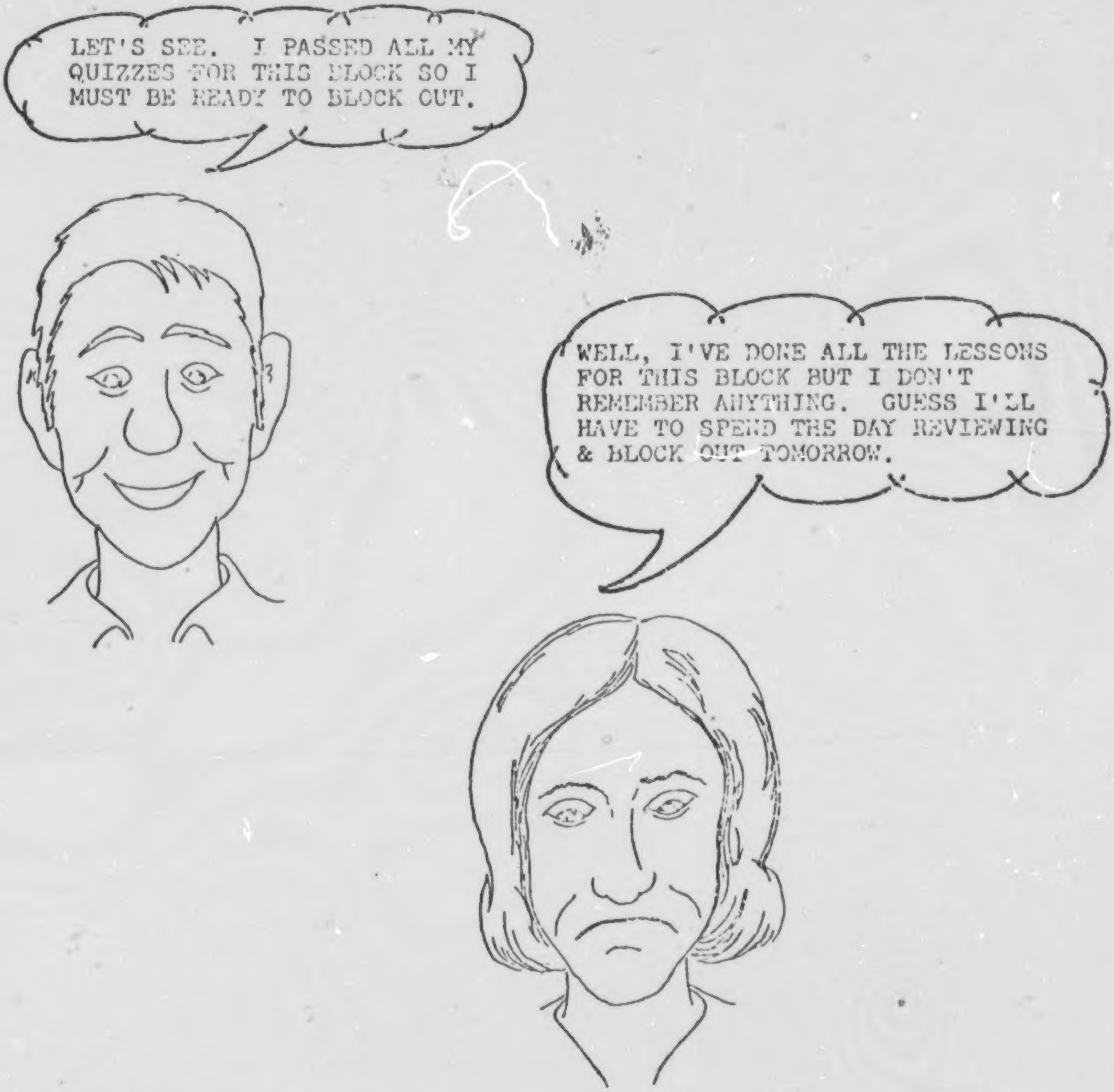
Efficient students read the objectives before and after each lesson. This gives them clues about the information on which they will be tested and tells them what skills are most important to learn. They know that this information will help them plan their study time and pass each test.

Inefficient students don't read the objectives because they are a "waste of time." By not reading the objectives, inefficient students sometimes fail tests because they didn't learn the most important skills or knowledge and therefore, lose time over the long run.


LET'S SEE. THIS LESSON IS 20 PAGES LONG SO IF I READ THE OBJECTIVES, THEN READ THE LESSON & THEN REREAD THE OBJECTIVES, I SHOULD BE READY TO TAKE THE QUIZ ABOUT 1400.
DARN! I THOUGHT I COULD SAVE TIME BY NOT READING THE OBJECTIVES BUT NOW I'VE FAILED THE QUIZ SO I HAVE TO DO IT ALL OVER AGAIN. I REALLY WASTED MY TIME.

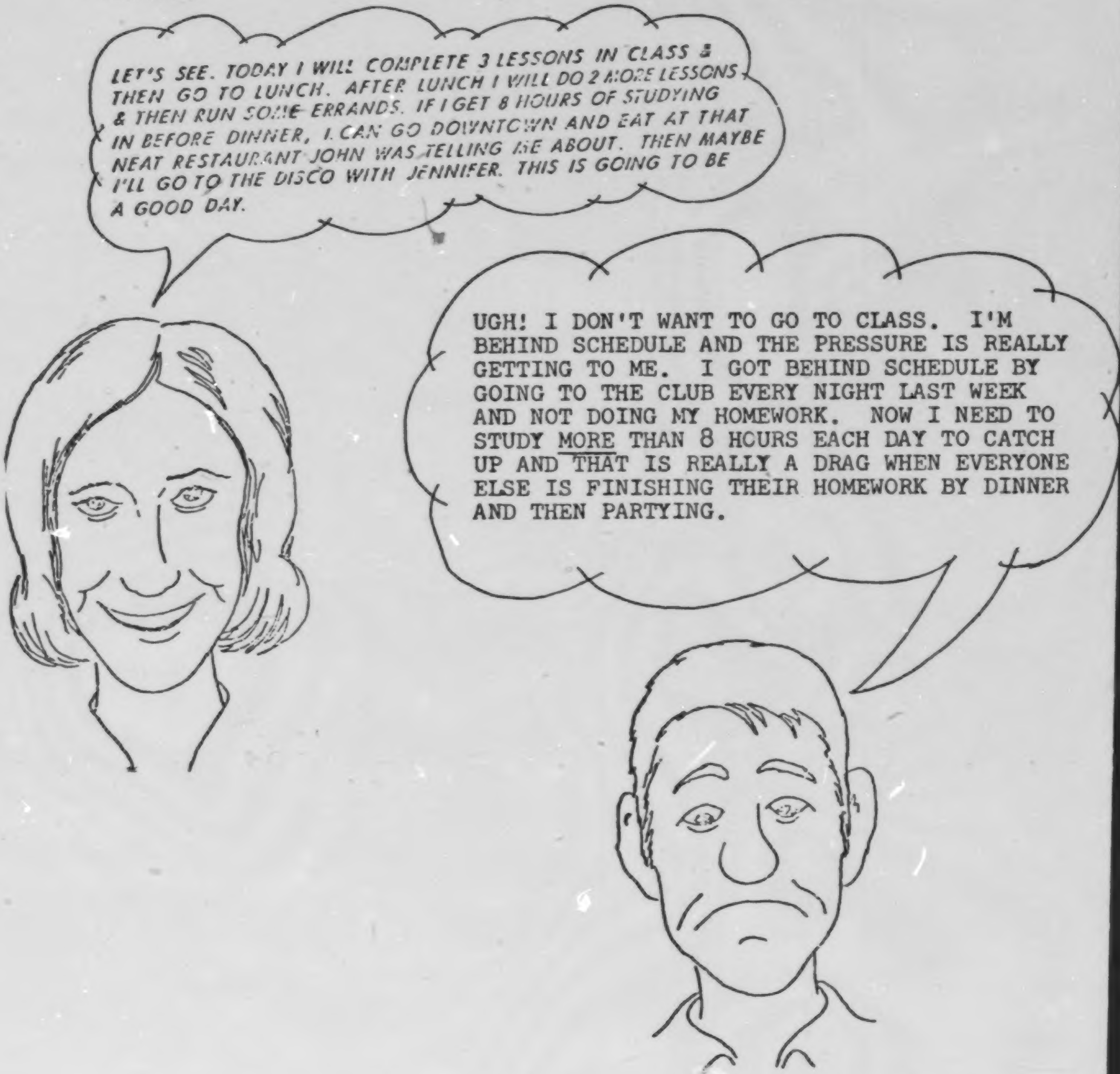
Efficient students use the quizzes to test their knowledge. If they do well on the quizzes, they know that they will do well on the tests that count.

Inefficient students rush through the quizzes without thinking and sometimes try to cheat on the answer sheets. They then have to spend extra time later studying for the tests that count. Inefficient students take the quizzes without trying to remember the information.


LET'S SEE. I PASSED ALL MY QUIZZES FOR THIS BLOCK SO I MUST BE READY TO BLOCK OUT.
WELL, I'VE DONE ALL THE LESSONS FOR THIS BLOCK BUT I DON'T REMEMBER ANYTHING. GUESS I'LL HAVE TO SPEND THE DAY REVIEWING & BLOCK OUT TOMORROW.

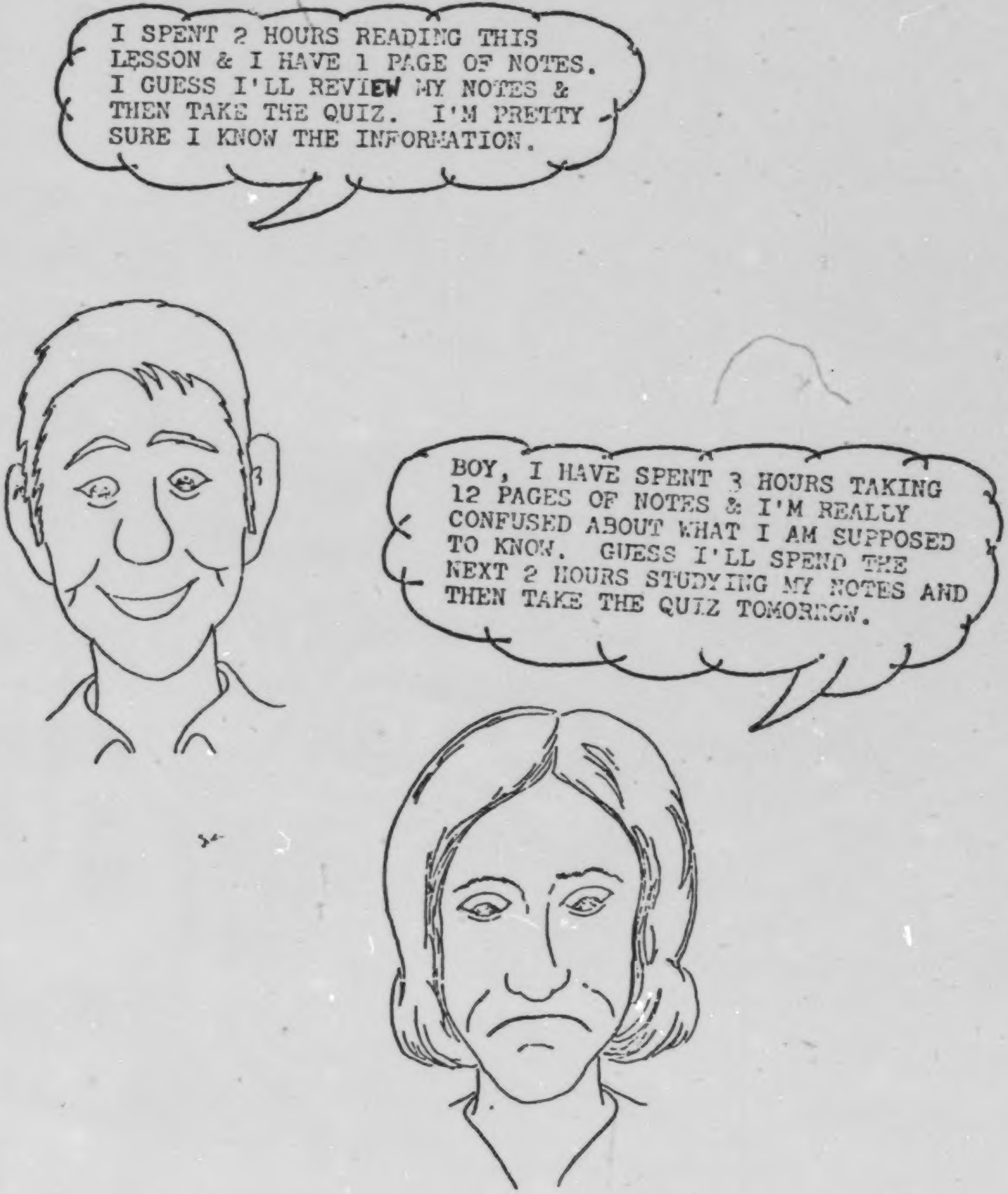
Efficient students plan a study schedule each day which includes some study time outside of class. By doing "homework" efficient students progress as rapidly as possible toward their course completion goal. They work an 8 hour day and then enjoy the rest of their time because they are staying on schedule.

Inefficient students don't discipline themselves to plan study time carefully. They study less than 8 full hours per day and often fall behind their work schedule. This causes them to feel frustrated or anxious.


LET'S SEE. TODAY I WILL COMPLETE 3 LESSONS IN CLASS & THEN GO TO LUNCH. AFTER LUNCH I WILL DO 2 MORE LESSONS & THEN RUN SOME ERRANDS. IF I GET 8 HOURS OF STUDYING IN BEFORE DINNER, I CAN GO DOWNTOWN AND EAT AT THAT NEAT RESTAURANT JOHN WAS TELLING ME ABOUT. THEN MAYBE I'LL GO TO THE DISCO WITH JENNIFER. THIS IS GOING TO BE A GOOD DAY.
UGH! I DON'T WANT TO GO TO CLASS. I'M BEHIND SCHEDULE AND THE PRESSURE IS REALLY GETTING TO ME. I GOT BEHIND SCHEDULE BY GOING TO THE CLUB EVERY NIGHT LAST WEEK AND NOT DOING MY HOMEWORK. NOW I NEED TO STUDY MORE THAN 8 HOURS EACH DAY TO CATCH UP AND THAT IS REALLY A DRAG WHEN EVERYONE ELSE IS FINISHING THEIR HOMEWORK BY DINNER AND THEN PARTYING.

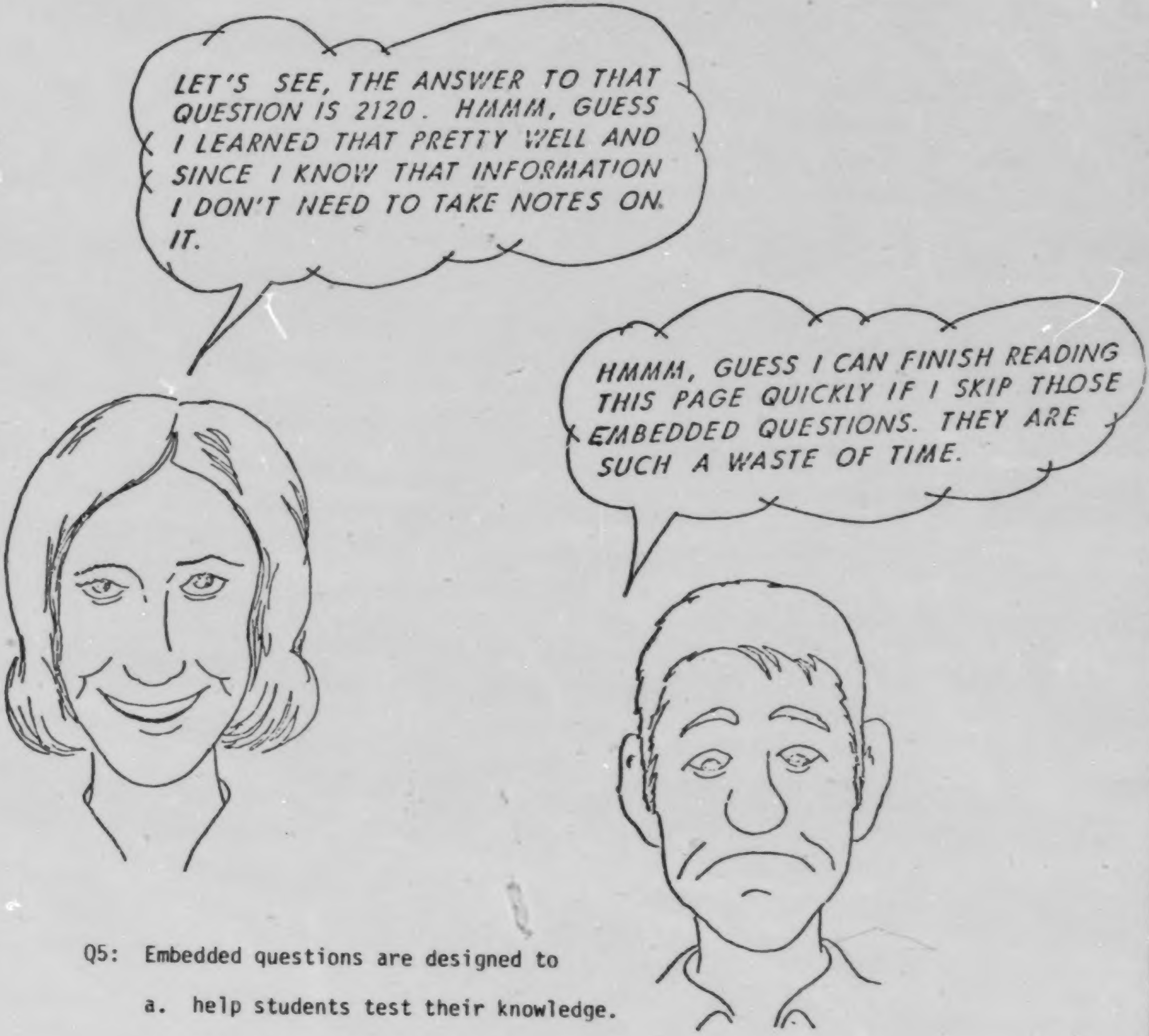
Efficient students may or may not take notes. When they do take notes, efficient students write down only the major points to be remembered or information which is confusing. But they spend most of their time concentrating on the material and trying to understand it.

Some inefficient students spend a lot of time taking notes and little time concentrating on the material. They end up "rewriting the book" without learning the information.


I SPENT 2 HOURS READING THIS LESSON & I HAVE 1 PAGE OF NOTES. I GUESS I'LL REVIEW MY NOTES & THEN TAKE THE QUIZ. I'M PRETTY SURE I KNOW THE INFORMATION.
BOY, I HAVE SPENT 3 HOURS TAKING 12 PAGES OF NOTES & I'M REALLY CONFUSED ABOUT WHAT I AM SUPPOSED TO KNOW. GUESS I'LL SPEND THE NEXT 2 HOURS STUDYING MY NOTES AND THEN TAKE THE QUIZ TOMORROW.

Some lessons contain questions designed to test the student's understanding of the information being presented. Efficient students use these embedded questions to test if they have been concentrating on the material.

Inefficient students tend to ignore these embedded questions. They don't take advantage of these learning tools.


LET'S SEE, THE ANSWER TO THAT QUESTION IS 2120. HMMM, GUESS I LEARNED THAT PRETTY WELL AND SINCE I KNOW THAT INFORMATION I DON'T NEED TO TAKE NOTES ON IT.
HMMM, GUESS I CAN FINISH READING THIS PAGE QUICKLY IF I SKIP THOSE EMBEDDED QUESTIONS. THEY ARE SUCH A WASTE OF TIME.

Q5: Embedded questions are designed to

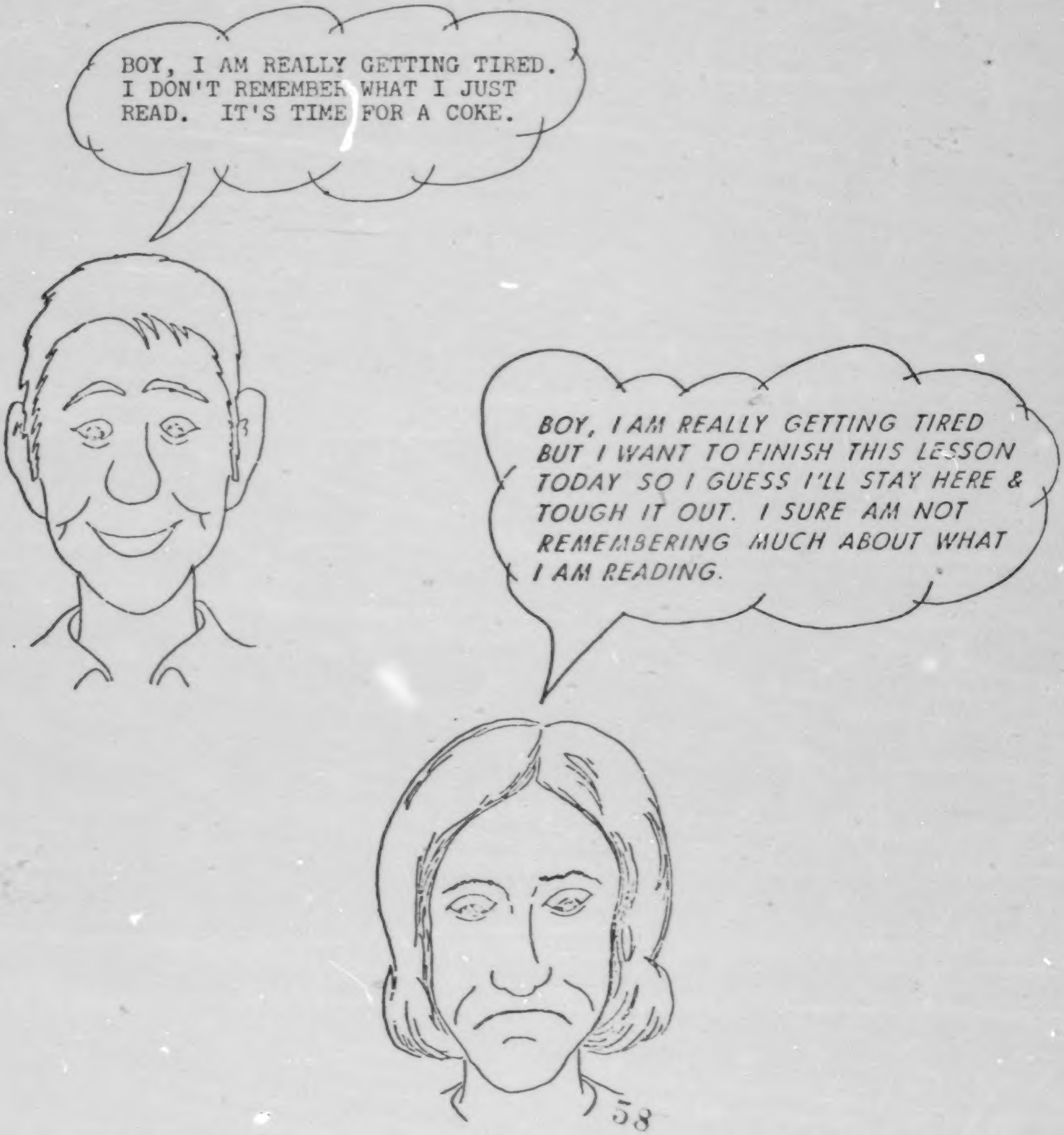
a. help students test their knowledge.

b. help students take notes.

c. help instructors test students.

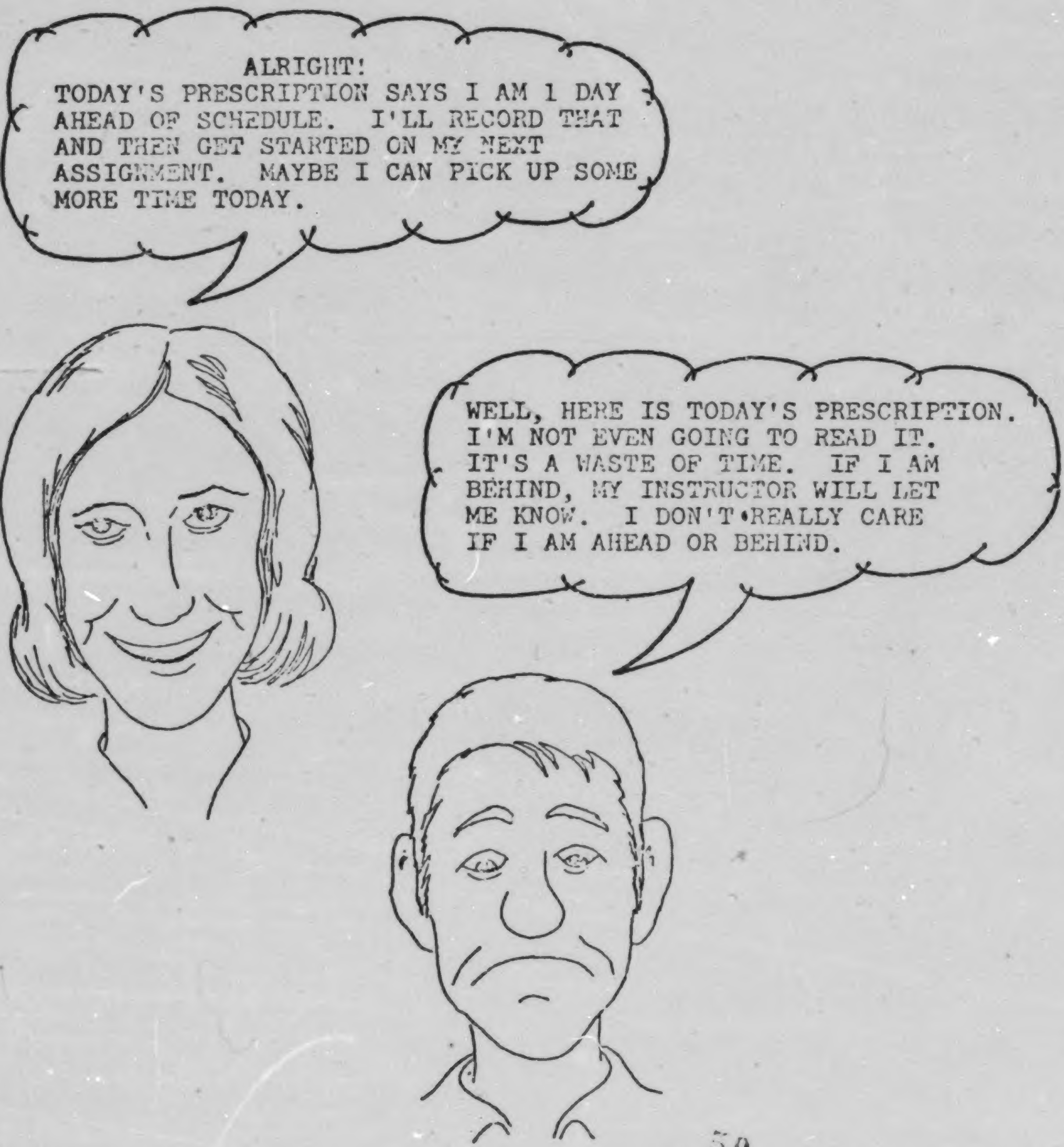
Efficient students take periodic breaks to get back their strength and motivation. They take their breaks when they feel tired or bored and not when the clock says they have earned a break.

Inefficient students either push ahead hour after hour, even though they are tired and unmotivated, or take a break every hour and extend it for as long as possible.


BOY, I AM REALLY GETTING TIRED. I DON'T REMEMBER WHAT I JUST READ. IT'S TIME FOR A COKE.
BOY, I AM REALLY GETTING TIRED BUT I WANT TO FINISH THIS LESSON TODAY SO I GUESS I'LL STAY HERE & TOUGH IT OUT. I SURE AM NOT REMEMBERING MUCH ABOUT WHAT I AM READING.

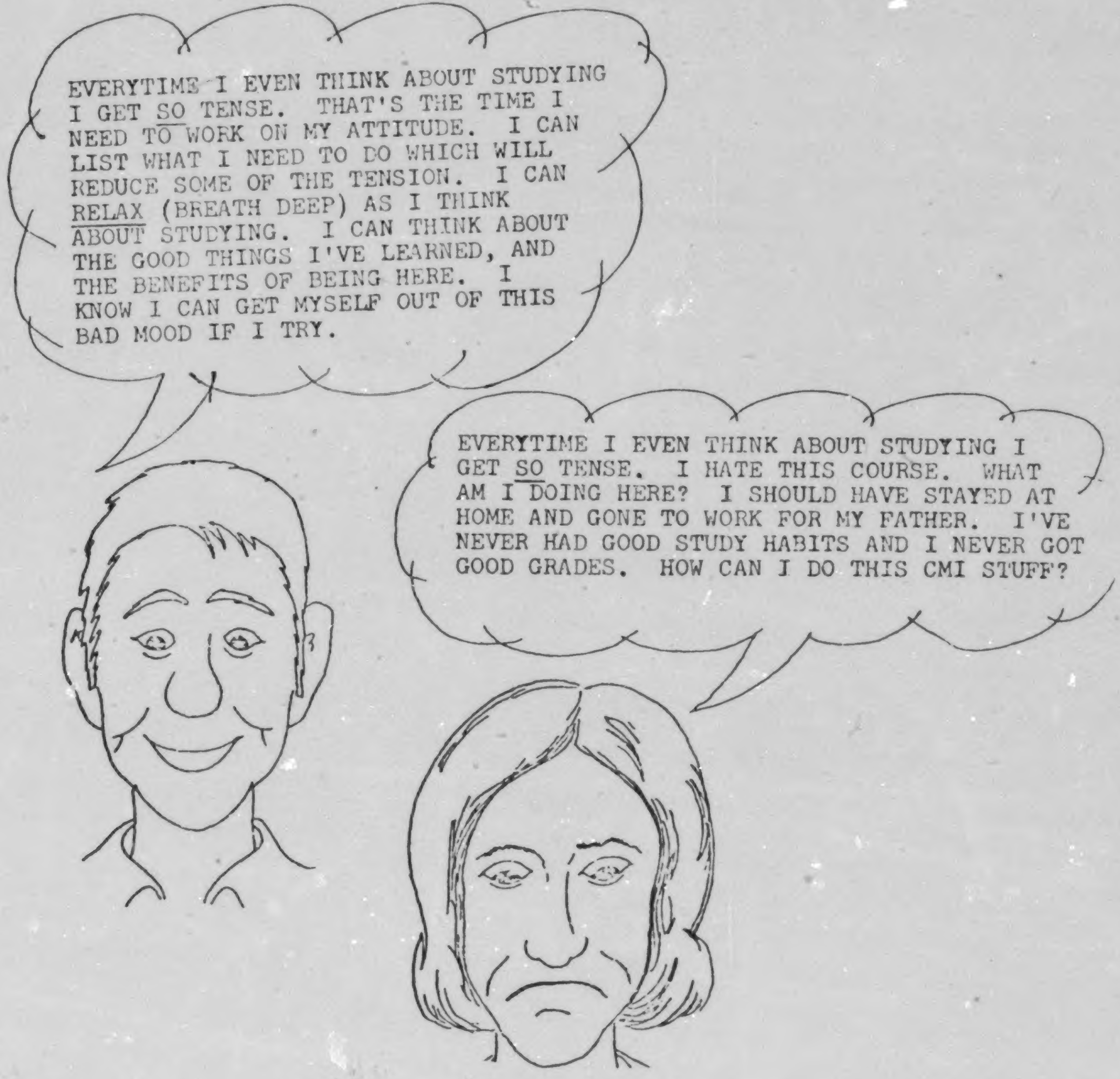
Efficient students make a committment to work towards their course completion goal and keep track of their daily progress. They keep a careful, written record of their progress in order to regularly remind themselves of how they are progressing toward their goal.

Inefficient students don't make a committment to meet their schedule. They don't keep track of their daily progress and just drift through the course. This forces their instructors to treat them as irresponsible students and perhaps assign them to extra study sessions.


ALRIGHT! TODAY'S PRESCRIPTION SAYS I AM 1 DAY AHEAD OF SCHEDULE. I'LL RECORD THAT AND THEN GET STARTED ON MY NEXT ASSIGNMENT. MAYBE I CAN PICK UP SOME MORE TIME TODAY.
WELL, HERE IS TODAY'S PRESCRIPTION. I'M NOT EVEN GOING TO READ IT. IT'S A WASTE OF TIME. IF I AM BEHIND, MY INSTRUCTOR WILL LET ME KNOW. I DON'T REALLY CARE IF I AM AHEAD OR BEHIND.

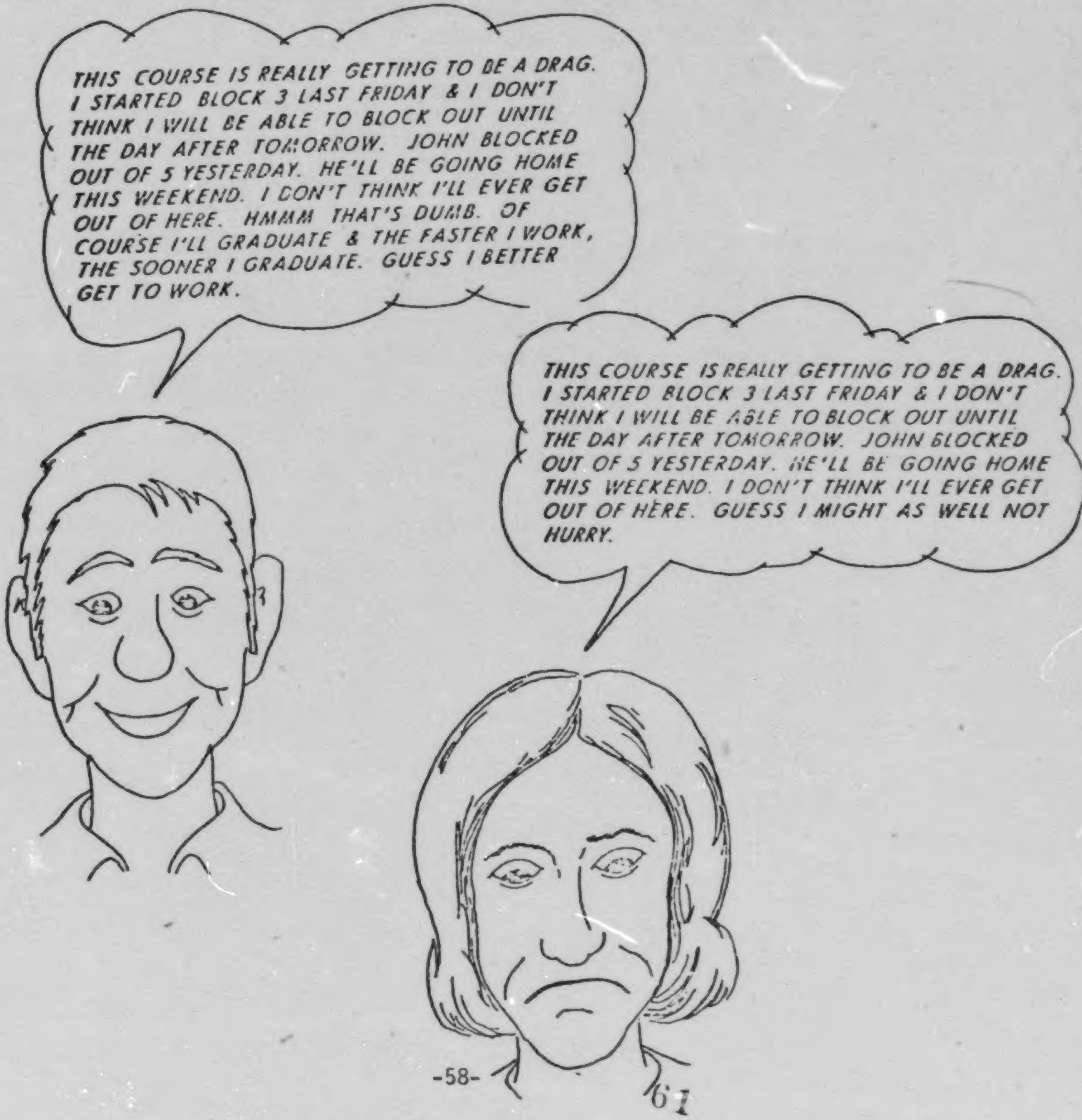
Efficient students know that when they are in a good mood, studying seems to flow more easily. They can do more work in less time. They feel better and concentrate better. Efficient students realize that the ideal study mood is one in which you are relaxed yet alert. Your head is clear of the problems and tensions of the day. You are energetic and ready to begin. Efficient students also realize that they can control their moods by what they think and what they tell themselves.

Inefficient students think that moods are determined by situations outside of their control. When they are in a bad mood, they often just quit studying. Sometimes inefficient students in a bad mood stick with it but make very little progress because they are tired and anxious.


EVERYTIME I EVEN THINK ABOUT STUDYING I GET SO TENSE. THAT'S THE TIME I NEED TO WORK ON MY ATTITUDE. I CAN LIST WHAT I NEED TO DO WHICH WILL REDUCE SOME OF THE TENSION. I CAN RELAX (BREATH DEEP) AS I THINK ABOUT STUDYING. I CAN THINK ABOUT THE GOOD THINGS I'VE LEARNED, AND THE BENEFITS OF BEING HERE. I KNOW I CAN GET MYSELF OUT OF THIS BAD MOOD IF I TRY.
EVERYTIME I EVEN THINK ABOUT STUDYING I GET SO TENSE. I HATE THIS COURSE. WHAT AM I DOING HERE? I SHOULD HAVE STAYED AT HOME AND GONE TO WORK FOR MY FATHER. I'VE NEVER HAD GOOD STUDY HABITS AND I NEVER GOT GOOD GRADES. HOW CAN I DO THIS CMI STUFF?

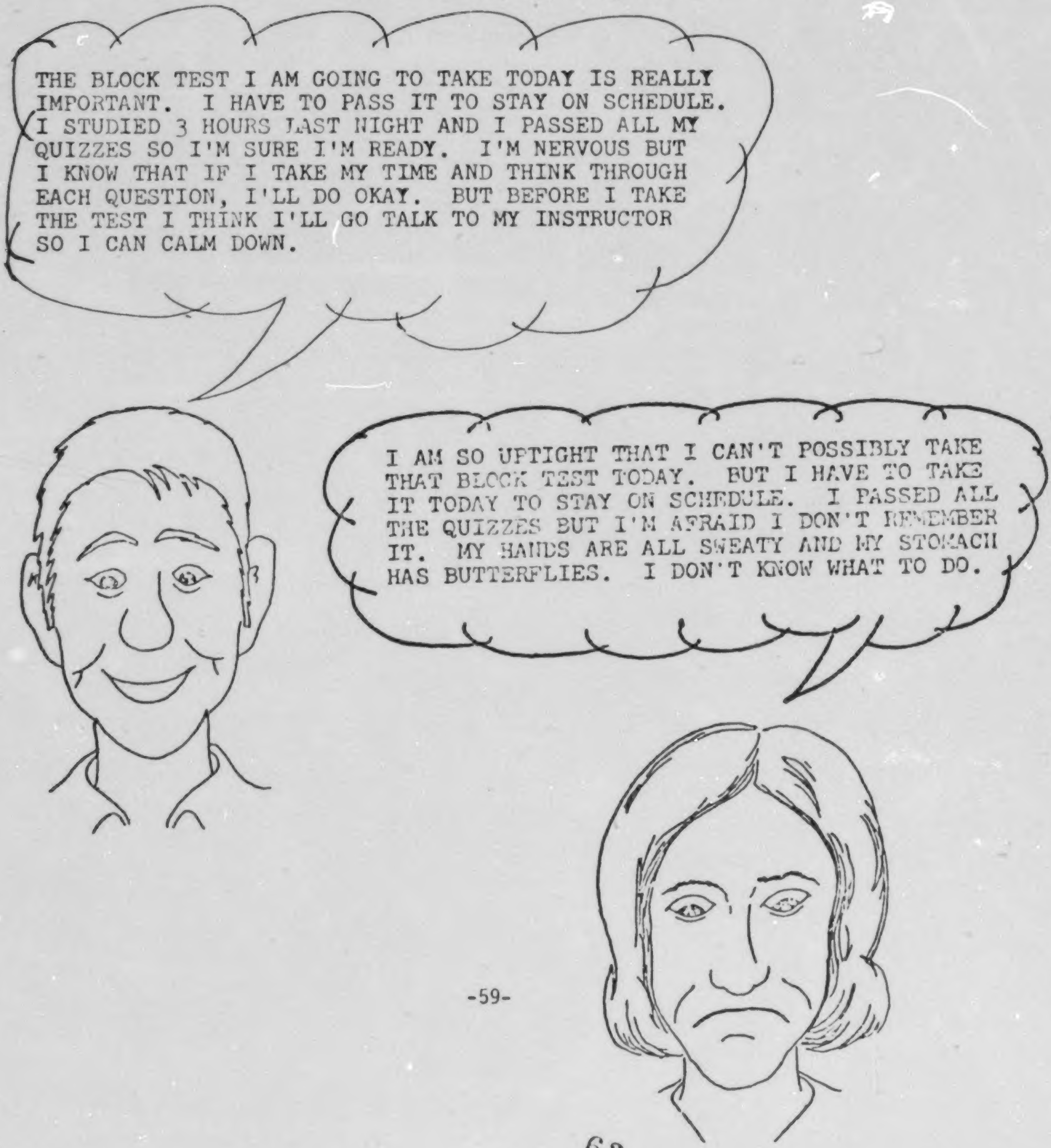
Efficient students try to work hard each day, but being human, they have their "down days" -- days when they are not motivated. In fact, we have found that many students experience a mid-course "slump" -- a time when they become unmotivated. To deal with these days, efficient students "psych themselves up" by remembering their goals (both their goals in the course and their long range personal goals). They realize that this course is just part of their whole life. Efficient students also try to make up for those down days by working harder the next day and/or studying more after class.

When inefficient students have "down days", they don't try to get back on schedule. They fail to meet their daily goals and this causes them to get more and more behind. Inefficient students, in other words, create a continuing circle of "down days" by failing to "psych themselves up."


THIS COURSE IS REALLY GETTING TO BE A DRAG. I STARTED BLOCK 3 LAST FRIDAY & I DON'T THINK I WILL BE ABLE TO BLOCK OUT UNTIL THE DAY AFTER TOMORROW. JOHN BLOCKED OUT OF 5 YESTERDAY. HE'LL BE GOING HOME THIS WEEKEND. I DON'T THINK I'LL EVER GET OUT OF HERE. HMMM THAT'S DUMB. OF COURSE I'LL GRADUATE & THE FASTER I WORK, THE SOONER I GRADUATE. GUESS I BETTER GET TO WORK.
THIS COURSE IS REALLY GETTING TO BE A DRAG. I STARTED BLOCK 3 LAST FRIDAY & I DON'T THINK I WILL BE ABLE TO BLOCK OUT UNTIL THE DAY AFTER TOMORROW. JOHN BLOCKED OUT OF 5 YESTERDAY. HE'LL BE GOING HOME THIS WEEKEND. I DON'T THINK I'LL EVER GET OUT OF HERE. GUESS I MIGHT AS WELL NOT HURRY.

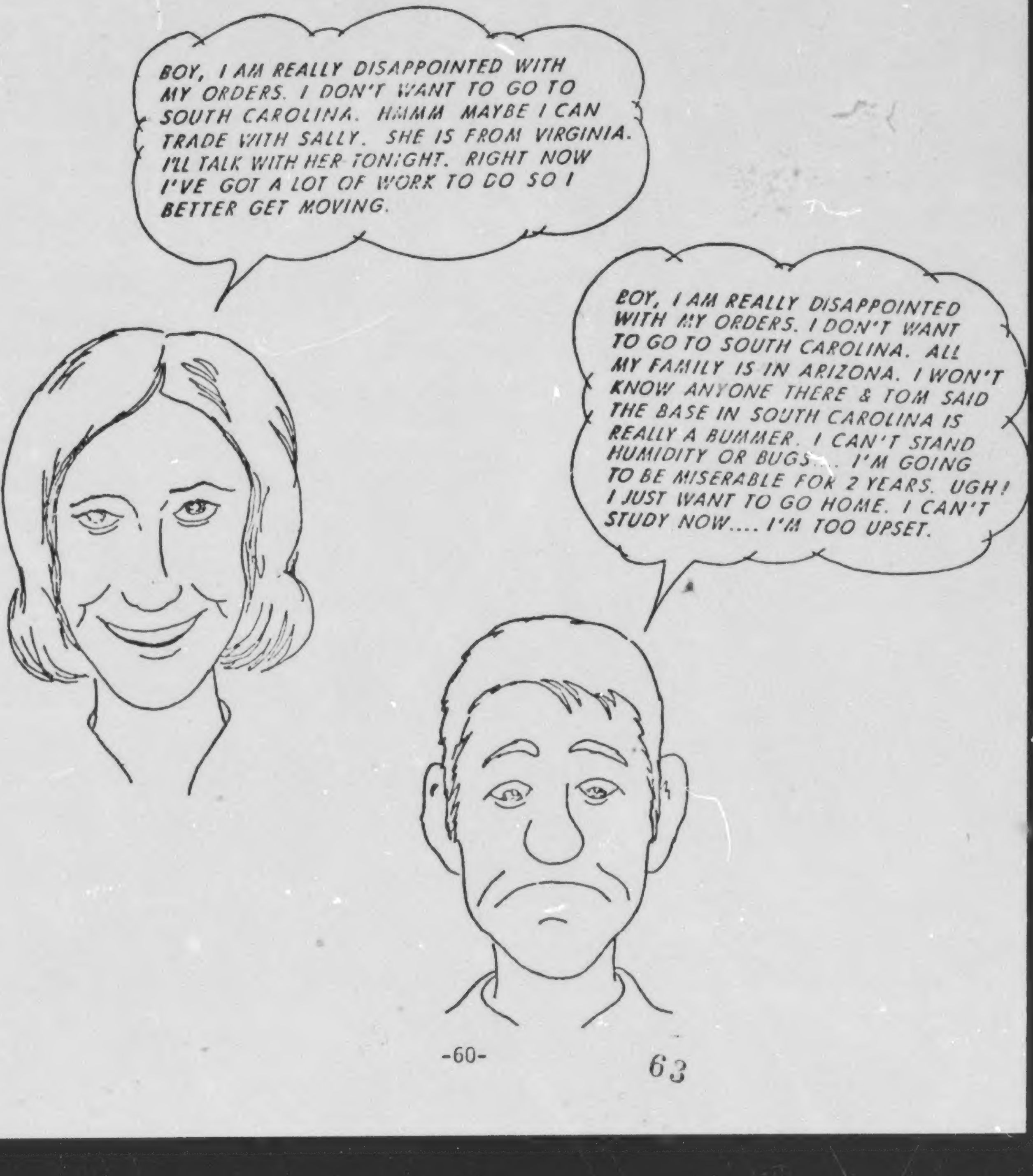
When efficient students encounter any kind of a problem, they stop and think about the problem and possible solutions. They don't panic or avoid the problem but take the time and get the help they need to find a workable solution. Efficient students ask their instructor for help when they have a problem they can't solve by themselves.

Inefficient students, when faced with a difficulty, either react without thinking, or do nothing. They don't realize that life is full of problems, but that everyone can solve most of them if they deal with them in a calm and confident manner and ask for help when they need it.


THE BLOCK TEST I AM GOING TO TAKE TODAY IS REALLY IMPORTANT. I HAVE TO PASS IT TO STAY ON SCHEDULE. I STUDIED 3 HOURS LAST NIGHT AND I PASSED ALL MY QUIZZES SO I'M SURE I'M READY. I'M NERVOUS BUT I KNOW THAT IF I TAKE MY TIME AND THINK THROUGH EACH QUESTION, I'LL DO OKAY. BUT BEFORE I TAKE THE TEST I THINK I'LL GO TALK TO MY INSTRUCTOR SO I CAN CALM DOWN.
I AM SO UPTIGHT THAT I CAN'T POSSIBLY TAKE THAT BLOCK TEST TODAY. BUT I HAVE TO TAKE IT TODAY TO STAY ON SCHEDULE. I PASSED ALL THE QUIZZES BUT I'M AFRAID I DON'T REMEMBER IT. MY HANDS ARE ALL SWEATY AND MY STOMACH HAS BUTTERFLIES. I DON'T KNOW WHAT TO DO.

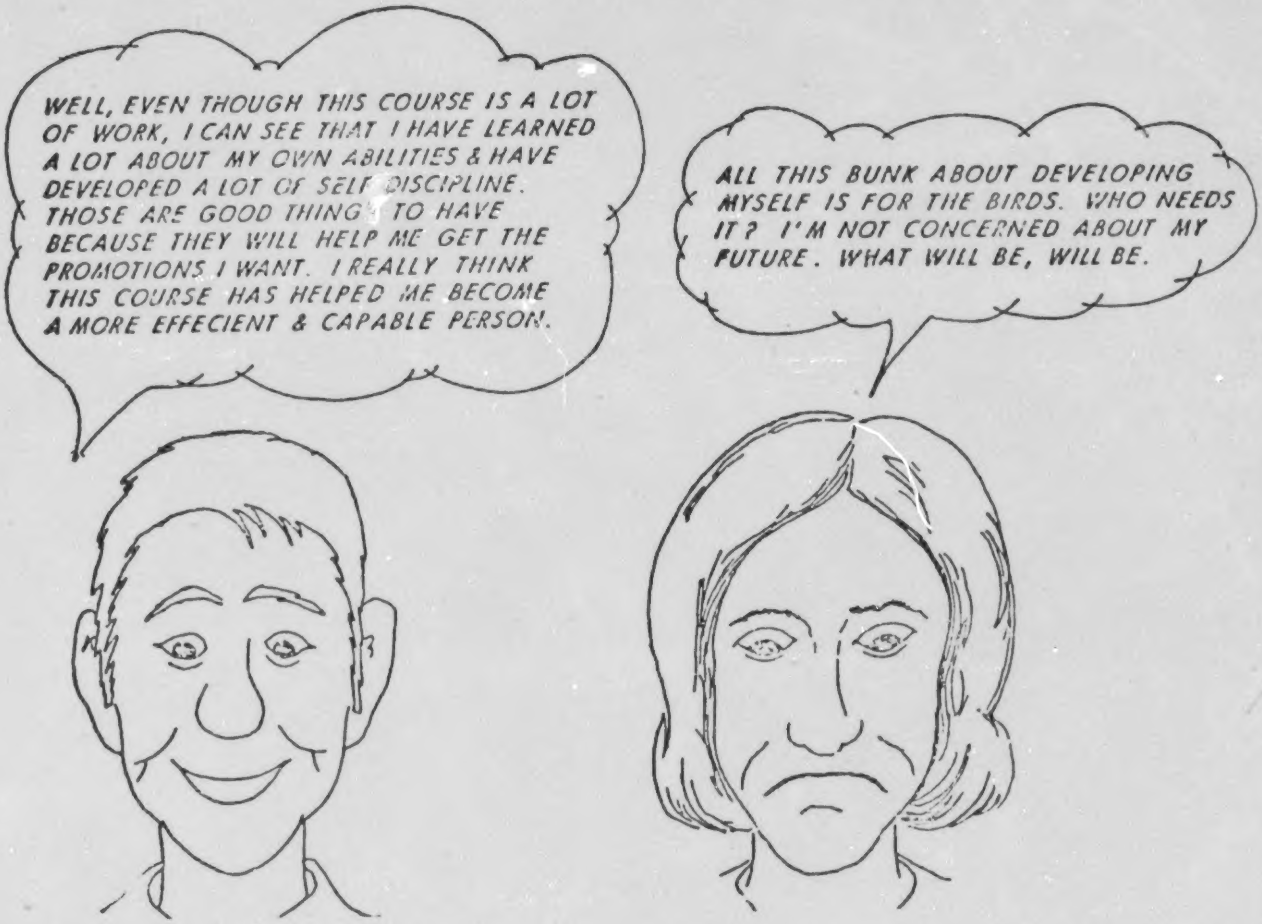
Efficient students realize that there are some problems over which they have little control. They also know that they are wasting time and energy by worrying about problems which may or may not occur in the future. Efficient students, therefore, relax and concentrate all their attention on learning the material in front of them.

Inefficient students tend to worry about future problems that may never happen and expect things to turn out badly. Research has shown that when you expect something to occur in a certain way, you unconsciously do things to insure that the situation meets your expectations. This means if you expect to have a miserable time studying, you will do things (unconsciously) to make yourself feel miserable so that your prediction won't be wrong.


BOY, I AM REALLY DISAPPOINTED WITH MY ORDERS. I DON'T WANT TO GO TO SOUTH CAROLINA. HMMM MAYBE I CAN TRADE WITH SALLY. SHE IS FROM VIRGINIA. I'LL TALK WITH HER TONIGHT. RIGHT NOW I'VE GOT A LOT OF WORK TO DO SO I BETTER GET MOVING.
BOY, I AM REALLY DISAPPOINTED WITH MY ORDERS. I DON'T WANT TO GO TO SOUTH CAROLINA. ALL MY FAMILY IS IN ARIZONA. I WON'T KNOW ANYONE THERE & TOM SAID THE BASE IN SOUTH CAROLINA IS REALLY A BUMMER. I CAN'T STAND HUMIDITY OR BUGS.... I'M GOING TO BE MISERABLE FOR 2 YEARS. UGH! I JUST WANT TO GO HOME. I CAN'T STUDY NOW.... I'M TOO UPSET.

Efficient students put a lot of work into a CMI system, but they also get a lot out of it. They can see that this system is a good investment for them, so they are willing to work a little harder than normal. That is, efficient students realize that the learning skills which are taught in this course will help them develop their own study skills, judgement, self-discipline and self-respect. They also know that the course material which they learn is a very important foundation for their next job. All of these skills will be very helpful toward future advancement, whether it be in the military or the civilian world.

Inefficient students think that all of this is a "snow job" and that they will do better if they ignore this advice and try to get around the system.

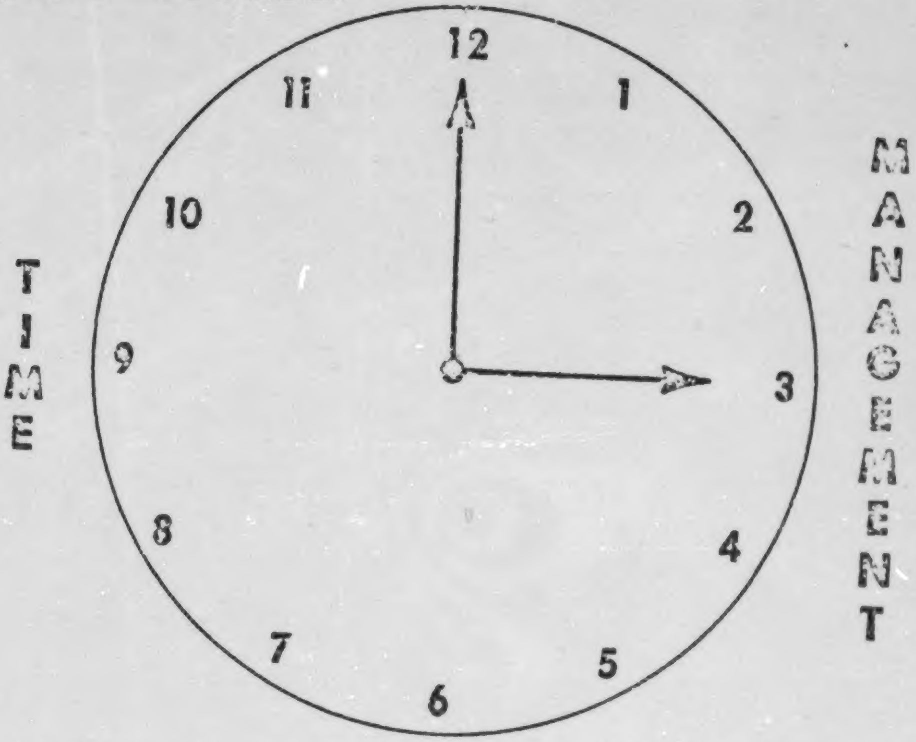

WELL, EVEN THOUGH THIS COURSE IS A LOT OF WORK, I CAN SEE THAT I HAVE LEARNED A LOT ABOUT MY OWN ABILITIES & HAVE DEVELOPED A LOT OF SELF DISCIPLINE. THOSE ARE GOOD THINGS TO HAVE BECAUSE THEY WILL HELP ME GET THE PROMOTIONS I WANT. I REALLY THINK THIS COURSE HAS HELPED ME BECOME A MORE EFFECIENT & CAPABLE PERSON.
ALL THIS BUNK ABOUT DEVELOPING MYSELF IS FOR THE BIRDS. WHO NEEDS IT? I'M NOT CONCERNED ABOUT MY FUTURE. WHAT WILL BE, WILL BE.

Q6: Getting into a good study mood is important and necessary for efficient learning.

a. True

b. False

c. I don't know

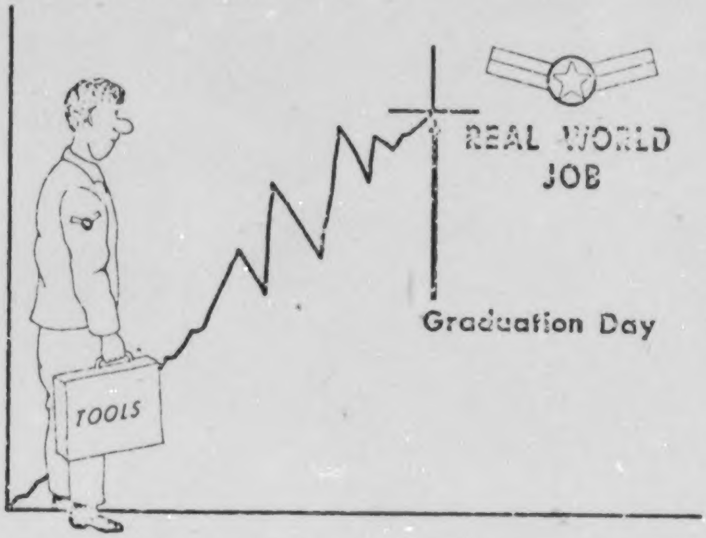

TIME
12
11
1
10
2
9
3
8
4
7
5
6
MANAGEMENT

Since you are responsible for your progress in this course, we feel it is important for you to learn some useful methods of planning your time.

For example, if you plan to drive to Miami Beach from Denver, you may plan to leave Denver on a specific day. To get from Denver to Miami Beach, you may plan to take a specific route which you would identify on a map. Driving from Denver to Miami Beach, you might also check off each town or city as you drove past it as a way of checking your progress.

DENVER
US
90
MIAMI
BEACH

The same idea is useful in completing this course. You began on a certain day and will graduate on a certain day. Since you are responsible for your progress in this course, it is a good idea for you to have a target graduation day. To be sure that your goal is not too high or too low, the computer has evaluated your background, interests and other characteristics and set a target day for you.

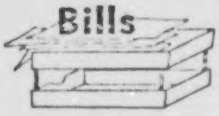


This Target Day is set to get you through the course as rapidly as possible. Time is important because it is very expensive to train military personnel; with today's modern weapons systems, your training will cost Uncle Sam as much as $80.00 per day. As a member of the military team, it is your responsibility to help cut costs wherever possible.

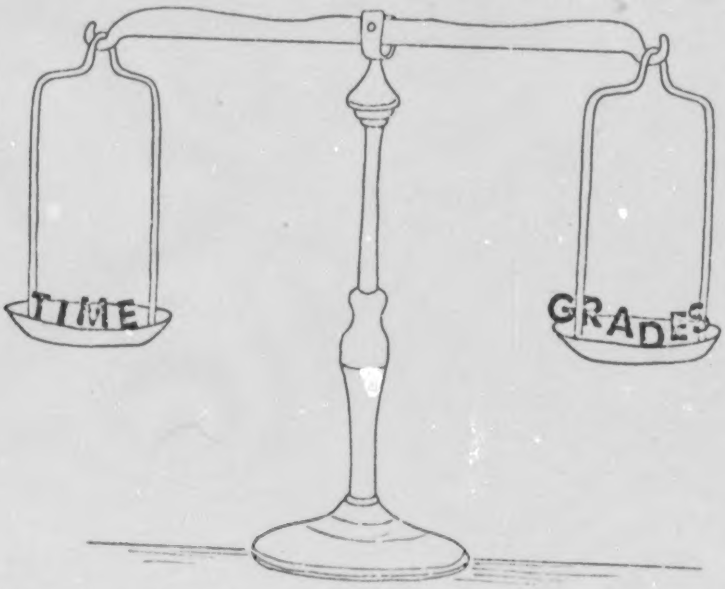
$80. X 25 DAYS IN COURSE
= $2000.

$80. X 30 DAYS IN COURSE
= $2400.

$80. X 40 DAYS IN COURSE
= $3200.



Although finishing this course as quickly as possible should be a primary goal, you must also meet certain levels of performance. You must satisfactorily complete each block of the course. As a result, there will be times when you are going to have to trade-off speed for satisfactory grades.


TIME
GRADES

That is, it is your responsibility to get through the course as quickly as possible and to keep up passing grades. Remember, it is to your benefit to finish the course as fast as you can so as to get back to the "real world" and help the taxpayers of this country save money. In order to do this, you must manage your time well.

FEDERAL RESERVE NOTE
UNITED STATES OF AMERICA
ONE DOLLAR

67

At this point, you may realize that the education you have experienced in the past is a lot different than the Air Force training which you are about to experience. We can think of at least 2 ways in which education differs from training. The table below shows you how they are different.

	PUBLIC SCHOOL EDUCATION	AIR FORCE MILITARY TRAINING
Goals	Learn as much as possible about many different things in a given amount of time.	Learn to do a specific job in the shortest possible time.
Standards	To obtain the highest possible grades at all times.	To learn the objectives. If the passing criterion is 75%, a score of 76% means the student learned the objective.

So you can see that success in public school education is measured by who gets the highest grades. Success in Air Force military training, on the other hand, is measured by who reaches required levels of performance in the shortest possible time.

Air Force military training prepares you to perform specific tasks required of people working in your career field. Though you will be trained to do a specific job, some of what you learn may not be required in your next assignment. The student in the carrel next to you, however, may have to know this material for his/her next assignment. It is for this reason that the Air Force has set required levels of performance in each section of the course. When you reach this level, you have just the right amount of knowledge or skill to do a good job at your next base after some additional training in the specific areas they require. If you were trained to do everything in your career field at technical school, you would be "overtrained." If you are overtrained, you are wasting your time and the Air Force's time by becoming skilled in things you may not need to know. Additionally, if all students were overtrained, it would increase the cost of training, the amount of time spent on first enlistments, and it would delay promotions.

It is important that you do not try to be an "education superstar" by getting the highest grades. Be a "training superstar" by getting through the course as soon as possible with acceptable test scores.

Q7: The standards of Air Force military training are to learn the objectives.

Learning objectives rather than working for high grades insures that students are

a. completely trained.

b. not overtrained.

c. learning as much as possible about many areas.

KEY

Q1 - c

Q2 - b

Q3 - a

Q4 - c

Q5 - a

Q6 - a

Q7 - b

PART II

TIME MANAGEMENT IN A COMPUTER MANAGED, INDIVIDUALIZED COURSE

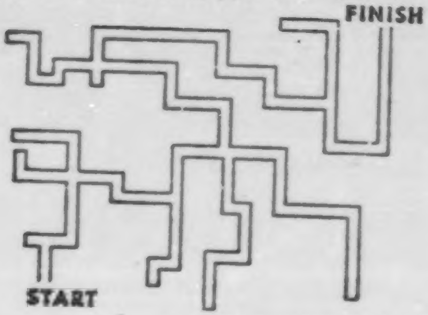
OR

If you don't know where you are
going, how will you know when you
get there?

The three objectives for this lesson on Time Management are:

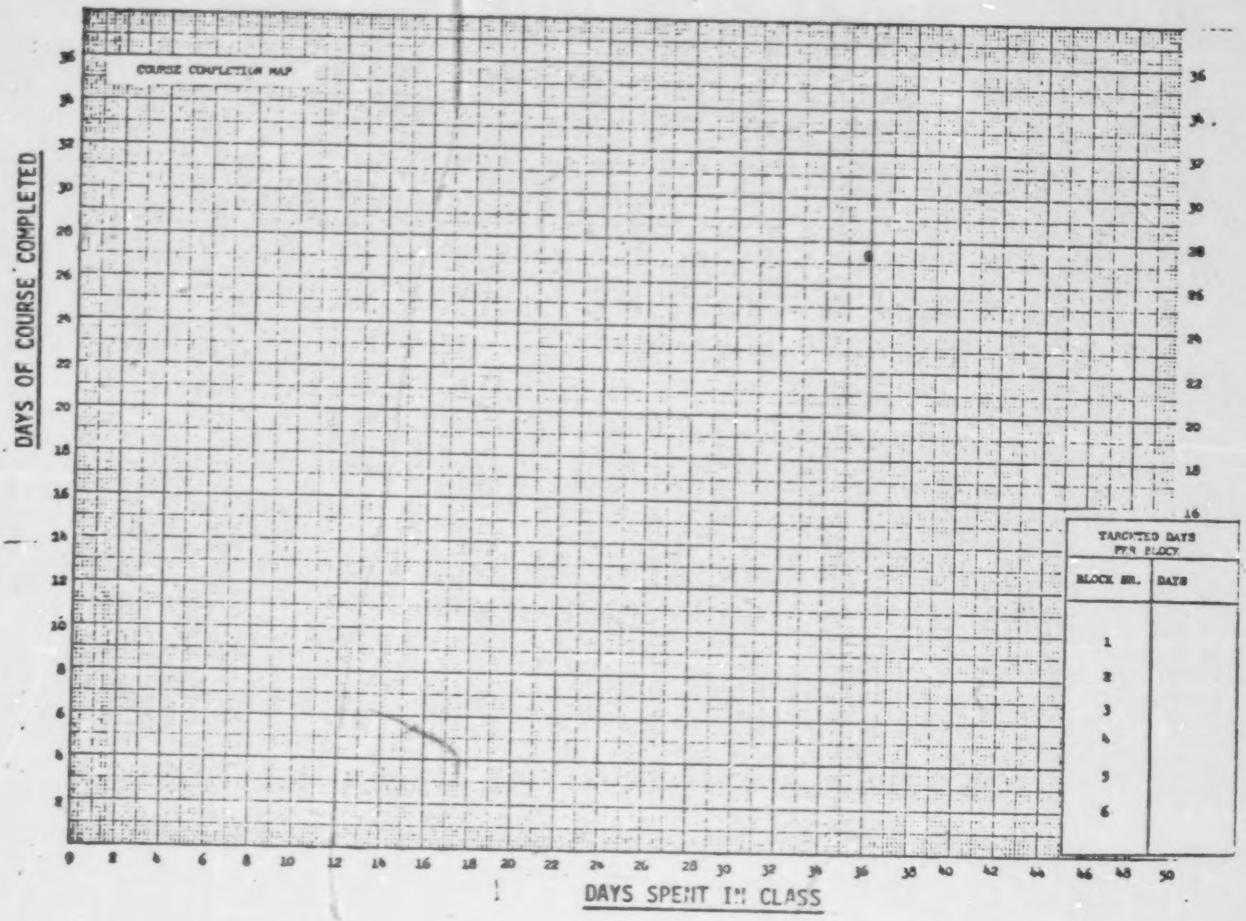
1. You will be able to use the computer to help you see how you are progressing toward your graduation day.
2. You will be able to keep track of your daily progress on a chart.
3. You will be able to identify when to enter into a Progress Counseling Session with your instructor.

As you now know, good time management requires you to set a starting point and an ending point. You are starting this course today so let's talk about the ending point and how you are going to get there.



Think back to the vacation example presented earlier in this lesson. To know how to get from Denver to Miami Beach you used a road map. We have started a course map for you. Part of your responsibility in this course will be to complete the map.

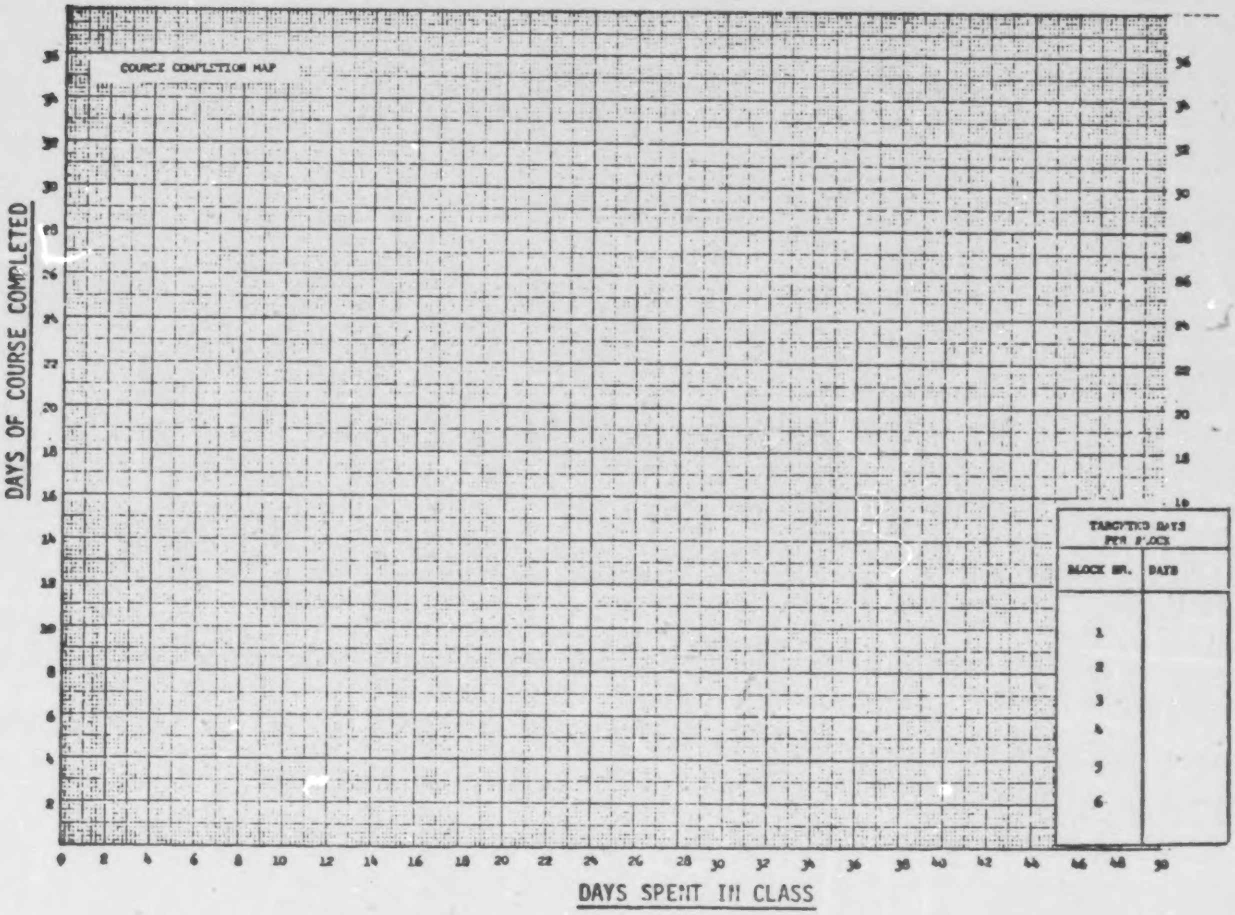
With the materials given to you for this lesson should be two pieces of graph paper with the beginning of a graph drawn on each of them. Each graph is exactly the same and is entitled Course Completion Map. If you do not have these, ask your instructor to provide you with them, ASAP!



OK, now you are going to practice filling in a Course Completion Map using the information of a typical student, Joe Student. Take one of the Course Completion Maps given to you with the materials for this lesson and write Joe Student's name at the top of the map.

Look at the graph shown below. You will notice that the horizontal (bottom) line is labeled "Days Spent In Class." The vertical (up and down) line is labeled "Days of Course Completed." The horizontal line indicates how much time you have spent in the learning center and does not include recorded absences. It is, therefore, important for you to make sure your instructor records all absences. If you are not in your learning center when you should be (clinic appointment, illness, personal leave, briefing) be sure your instructor marks you absent so this time is not counted against you.

The vertical line (Days of Course Completed) indicates how much of the course you have actually completed. Used together, these 2 lines will indicate how far ahead or behind schedule you are working.



Now, look at the example prescription (Student Status Report) below. Joe Student is targeted to spend 33 days in this course. That means Joe should complete the course in 33 class days.

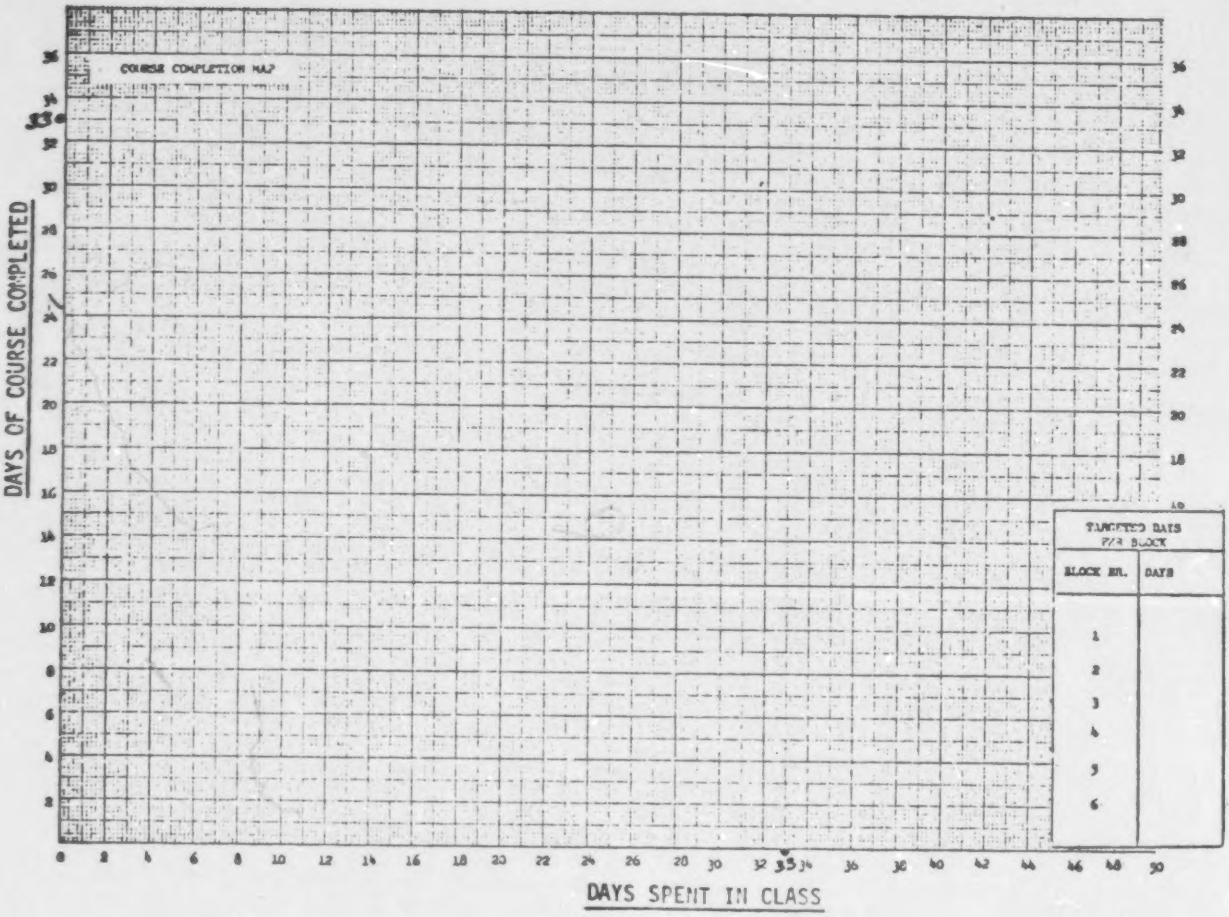
```
STUDENT, JOE             000-00-3334     day 7110     0952 hrs
PREASSESSMENT COMPLETE   //

Target days in course     33

Target days per block
    BLOCK      DAYS
      1         4.0
      2         6.0
      3         7.6
      4         6.2
      5         5.6
      6         3.4
```

Remember: a prescription (Student Status Report) is a message from the computer giving you information about:

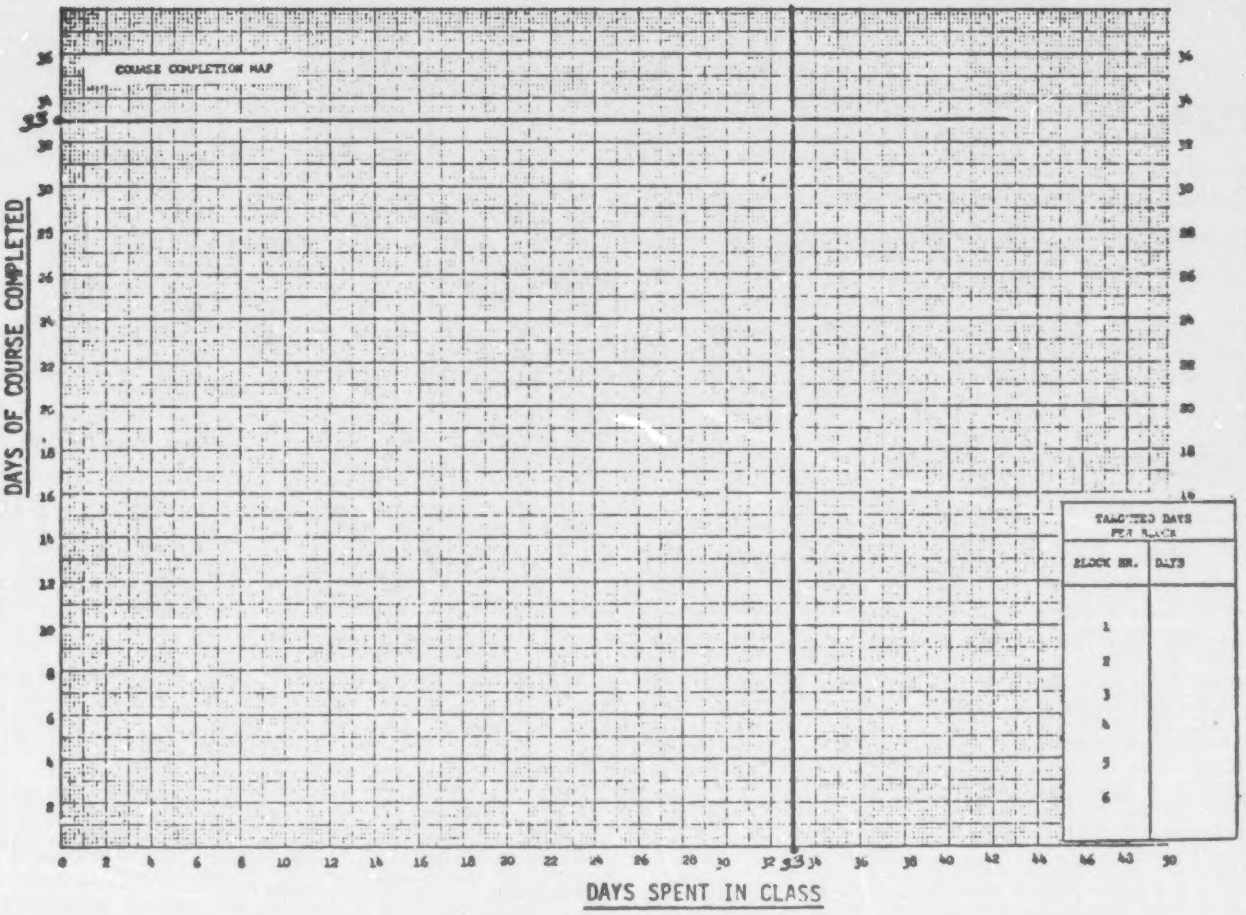
1) Target Days in Course and Target days per block, or
2) Your daily progress and your next assignment.

Now, you are going to plan Joe's study time. Take the Course Completion Map on which you have written Joe Student's name and do exactly as the following instructions indicate.

On the horizontal line (Days Spent in Class) locate the number 33 (Joe's Target Days in Course). Put a small dot at this location. Now on the vertical line (Days of Course Completed) locate the number 33 and put a small dot at this location.

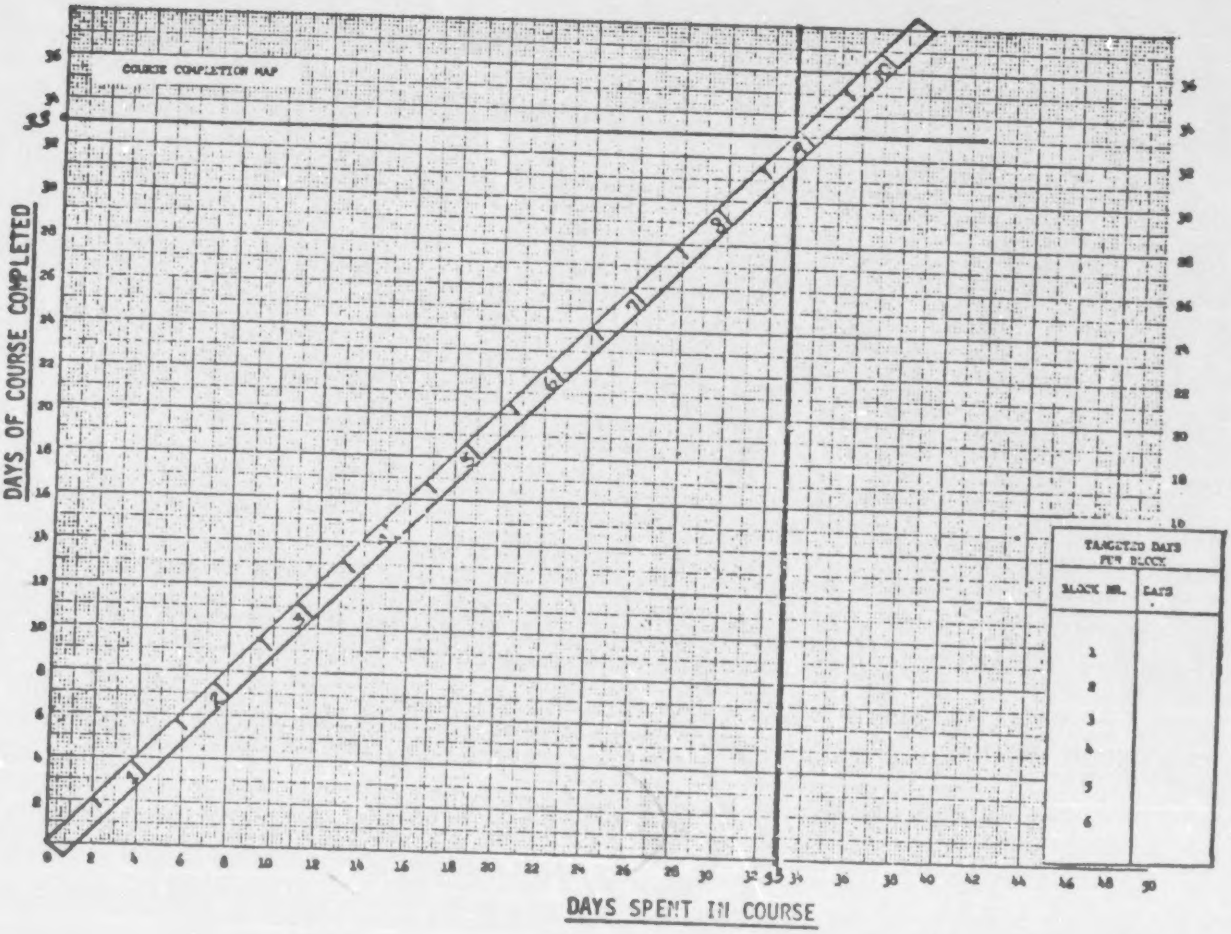


OK, now go back to the dot you made on the horizontal line and with your ruler draw a very light line straight up to the top of the graph paper. (There should be a ruler in the front of this lesson book. You don't have one??? Well, then get one from your instructor ASAP!) Go back to the dot you made on the vertical line and with your ruler draw another very light line straight across the graph paper.

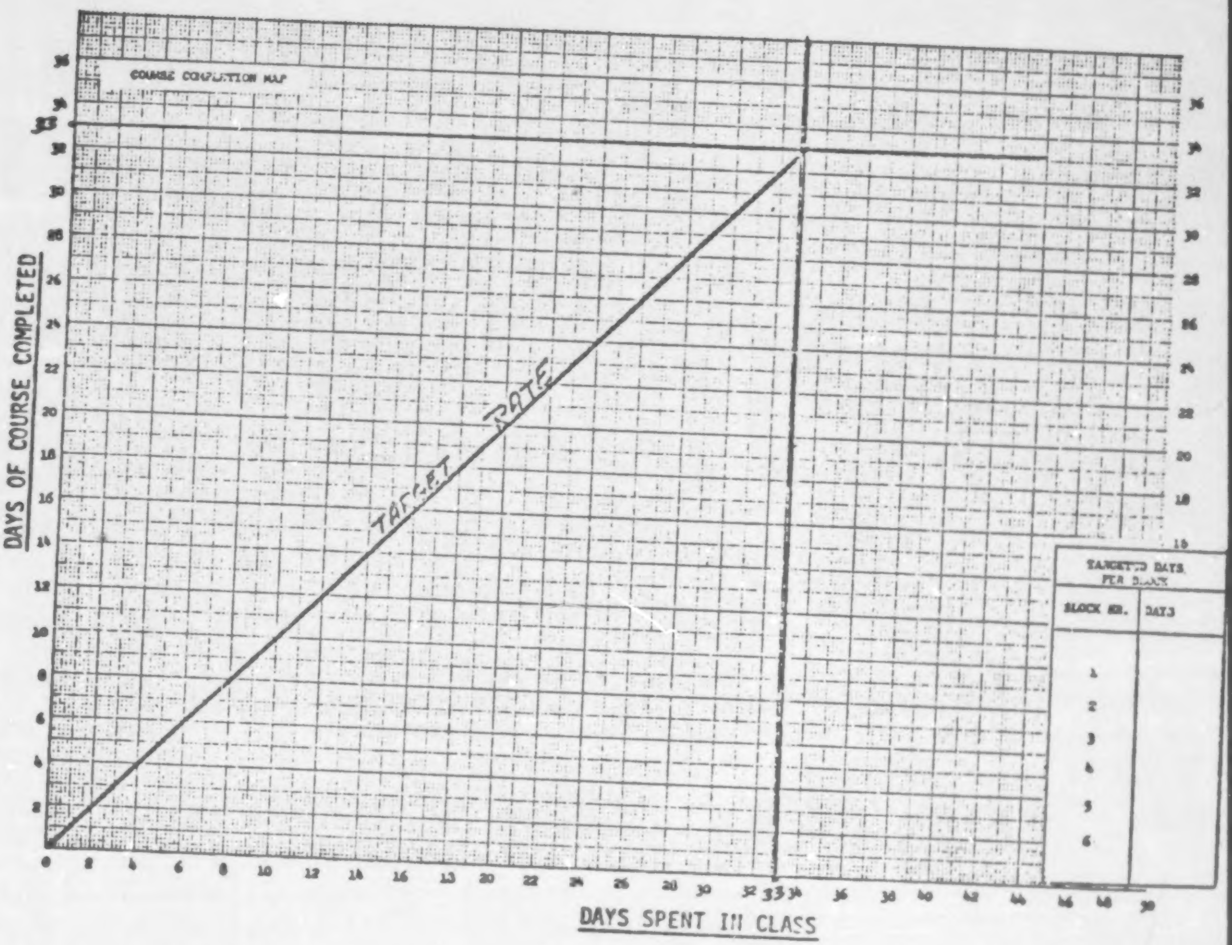


77

Now, line up your ruler between the points where the two very light lines cross and the point where the vertical line and the horizontal line meet. NOTE: The ruler should always cross graph lines at their intersections.



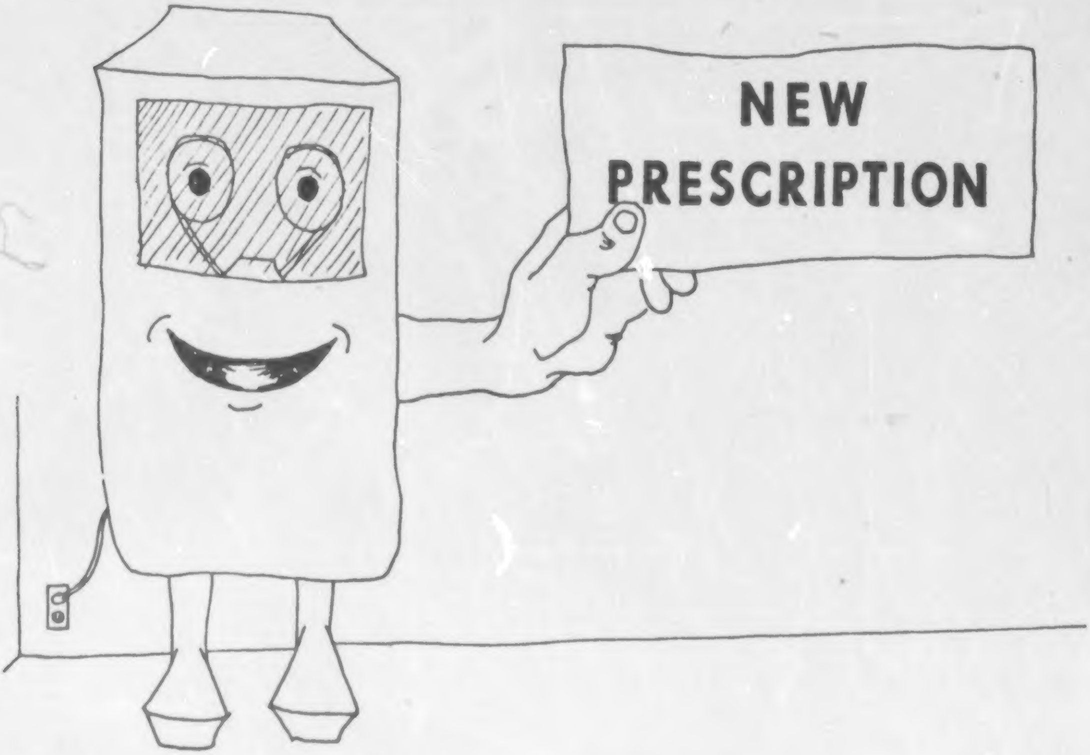
Draw a heavy line between these two points. This is the TARGET RATE. Please label this line "Target Rate."



OK, now look below at Joe's prescription again. After the Target Rate information, there are target completion times for each section of the course. These are called Target Days per Block. For example, Joe Student has a Target Rate of 33 days and it is estimated that he will spend 4.0 days in Block 1, 6.0 days in Block 2, 7.6 days in Block 3 and so on. These are estimates of how difficult each block will be for Joe.

```
STUDENT, JOE              000-00-3334    day 7110    0952 hrs
PREASSESSMENT COMPLETE     //

Target days in course      33

Target days per block
     Block      Days
       1         4.0
       2         6.0
       3         7.6
       4         6.2
       5         5.6
       6         3.4
```

These estimates of how difficult each block will be for Joe may change if the course changes or if his target rate has been changed. If this occurs, he will get new information about his estimated time in each block when he gets a new prescription at the beginning of a block. If these Target Days per Block prescriptions change, the student should change the Target Days per Block section on his/her Course Completion Map.



REMEMBER: Target Days per Block is an estimate of how difficult a specific student may find each section of the course.

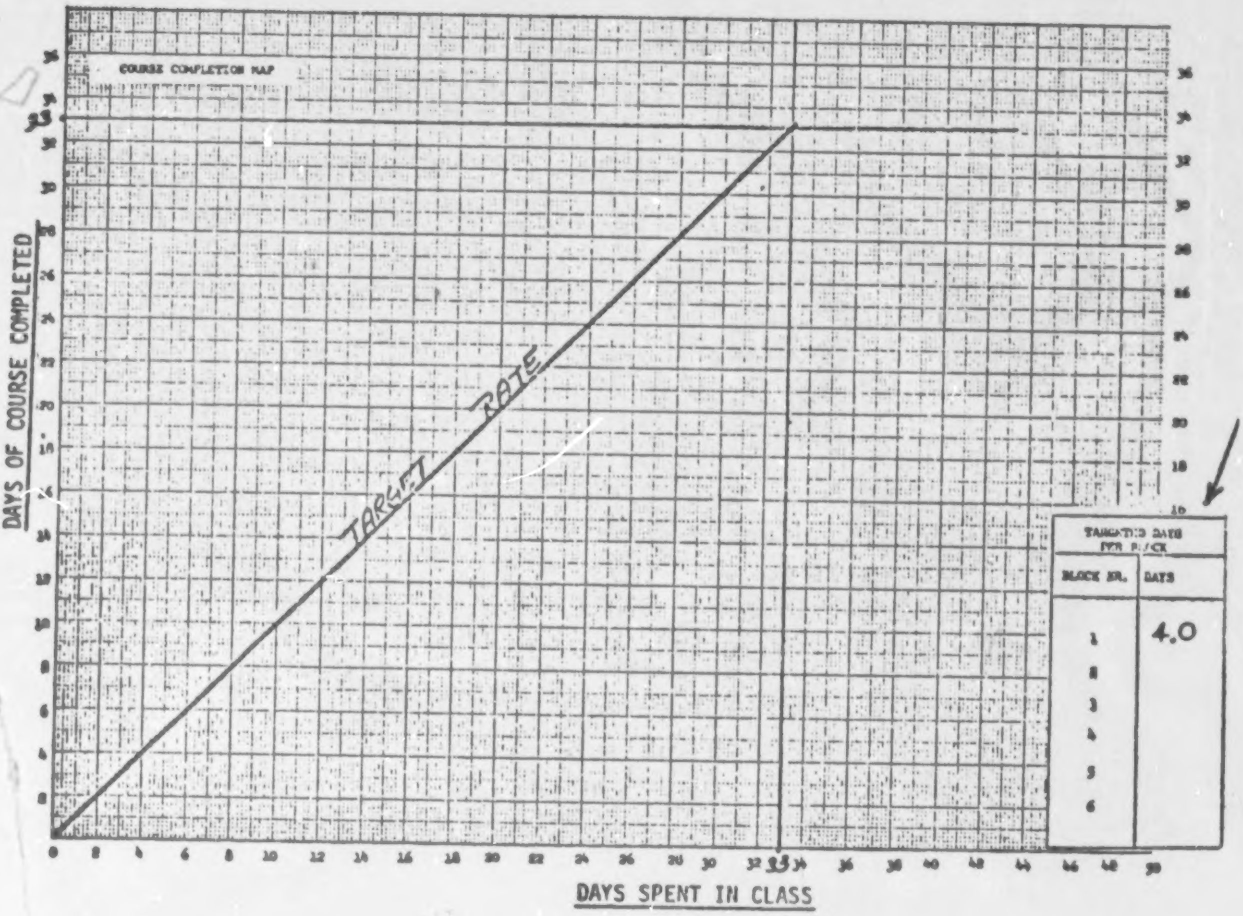
To record Joe's Target Days Per Block, fill in the box on the right-hand side of the graph. For example, Joe's prescription indicates he will probably need 4.0 days to complete Block 1. Write the number 4.0 in the Day column across from Block #1. Fill in the days column for each of the remaining blocks on your graph paper.

STUDENT, JOE 000-00-3334 day 7110 0952 hrs
PREASSESSMENT COMPLETE //

Target days in course 33

Target days per block

Block	Days
1	4.0
2	6.0
3	7.6
4	6.2
5	5.6
6	3.4



Now it may occur to you that knowing about how long you should spend in each lesson may be more helpful than knowing how long you should spend in each block. Along with the Course Completion Maps, you were given a Time Sheet. This sheet tells you the average time which students spend on each lesson. You can use this information to figure out how much time you should take to complete each lesson. If you want to finish the course in less time than most students, you will have to take less time on each lesson than most students.

TIME SHEET

This chart tells you the average time which students who take 30 days to complete the course, spend on each lesson. You can use this information to figure out how much time you should take to complete each lesson. If you want to finish the course in less than 30 days, you will have to take less time on each lesson. A student who wants to complete the course in 28 days will take less time on each lesson than the amount given on this time sheet. A student who wants to complete the course in 23 days will take even less time on each lesson.

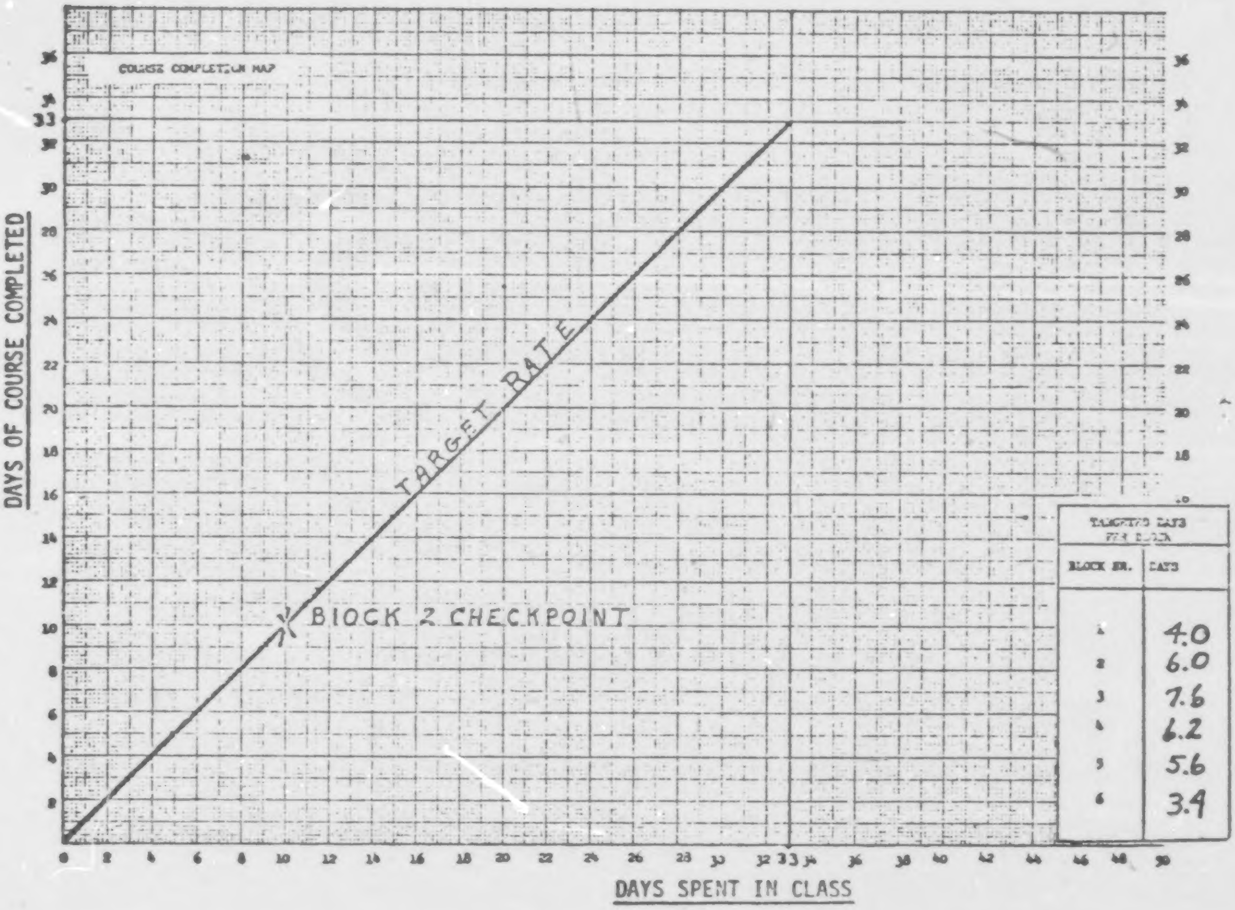
Block 1	Block 2	Block 3	Block 4
Lesson 1: 110 min. 2: 80 " 3: 100 " 4: 150 " 5: 60 " 6: 260 " 7: 110 " 8: 130 " 10: 95 " 11: 85 "	Lesson 1: 100 Min. 2; 140 " 3: 40 " 4: 190 " 5: 300 " 6: 150 " 7: 150 " 8: 100 " 12: 190 " 13: 70 "	Lesson 1: 220 min. 2: 240 " 3: 120 " 4: 190 " 5: 50 " 6: 240 " 7: 160 " 8: 120 " 9: 50 " 10: 60 " 12: 320 " 13: 130 "	Lesson 1: 150 min. 3: 200 " 4: 100 " 5: 140 " 6: 70 " 7: 80 " 8: 50 " 12: 290 " 13: 90 "
Block 5	**Block 6**		
Lesson 1: 90 min. 2: 150 " 3: 120 " 4: 120 " 5: 110 " 6: 60 " 7: 70 " 8: 70 " 9: 60" 10: 60 " 12: 250 " 13: 150 "	Lesson 1: 70 min. 2: 110 min. 3: 180 " 4: 120 " 5: 80 " 6: 60 " 7: 90 " 12: 130 " 13: 65 "		

Going back to Joe's Course Completion Map, two more points need to be marked on the graph: The Block 2 Checkpoint and the Graduation Date Checkpoint. These are important times in the course because Joe will go to his instructor at these points and the two of them will discuss his progress in the course. In other words, these are scheduled Progress Counseling Sessions.

Remember: The Block 2 Checkpoint and the Graduation Date Checkpoint are the student's responsibility. You must go to your instructor at these times to make sure that you are progressing satisfactorily.

To indicate the Block 2 Checkpoint, add the Block 1 target to the Block 2 target. In Joe's example, the Block 1 target is 4.0 and the Block 2 target is 6.0. 4.0 + 6.0 = 10.0.

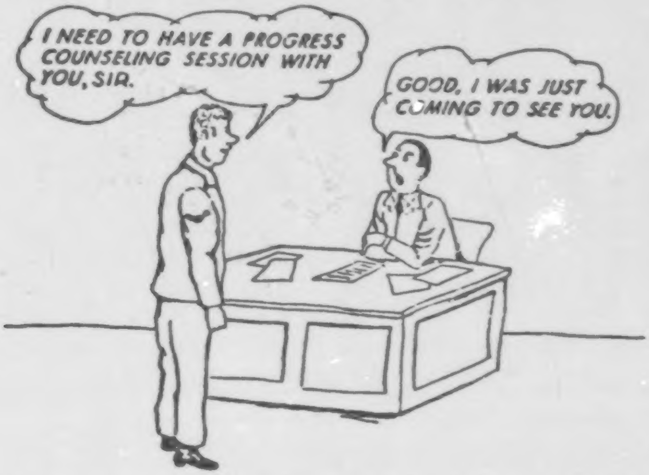
Locate 10.0 on the horizontal line (Days Spent in Class) of Joe's Course Completion Map. Following this line up the graph, make an X on the Target Rate line where line 10 crosses the Target Rate. This is the Block 2 Checkpoint. Please label the X "Block 2 Checkpoint."



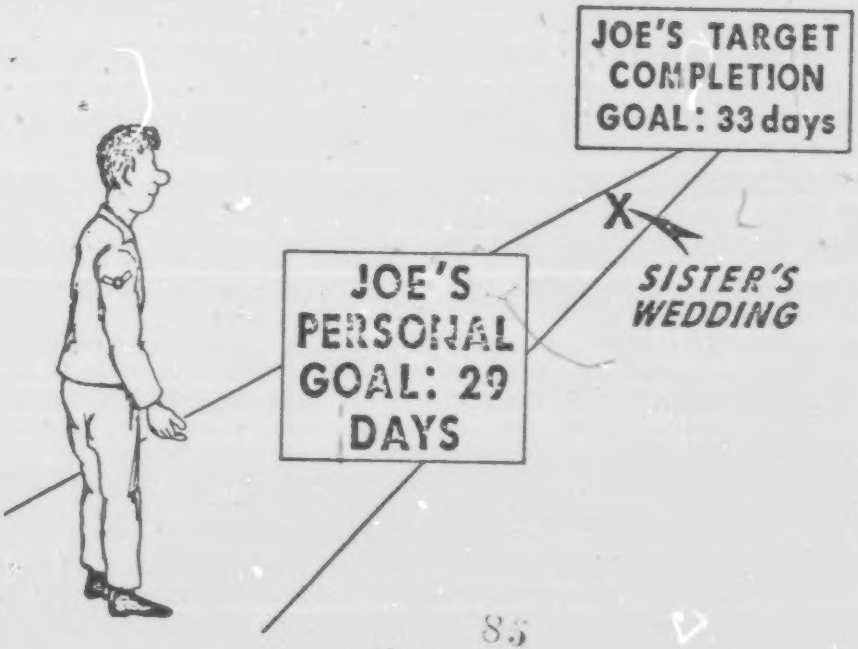
TARGETED DAYS PER BLOCK	
BLOCK NR.	DAYS
1	4.0
2	6.0
3	7.6
4	6.2
5	5.6
6	3.4

Now, there are several things which you must do at the Block 2 Checkpoint. (1) Answer each question on the back of your Course Completion Map by checking either "yes" or "no" in the Block 2 column. (2) Based on your answers to these questions, decide what is a reasonable but challenging goal for you. Can you go faster than the Target Rate? How much faster? Or can you just reach the Target Rate? (3) Meet with your instructor and set a Goal Rate.

Look at Joe Student's Course Completion Map again. Let's suppose that Joe has completed Block 2 and has found that he can go faster than his Target Rate. When he requests a Progress Counseling Session at the Block 2 Checkpoint, Joe will tell this to his instructor and they will set a Goal Rate which is faster than the Target Rate.

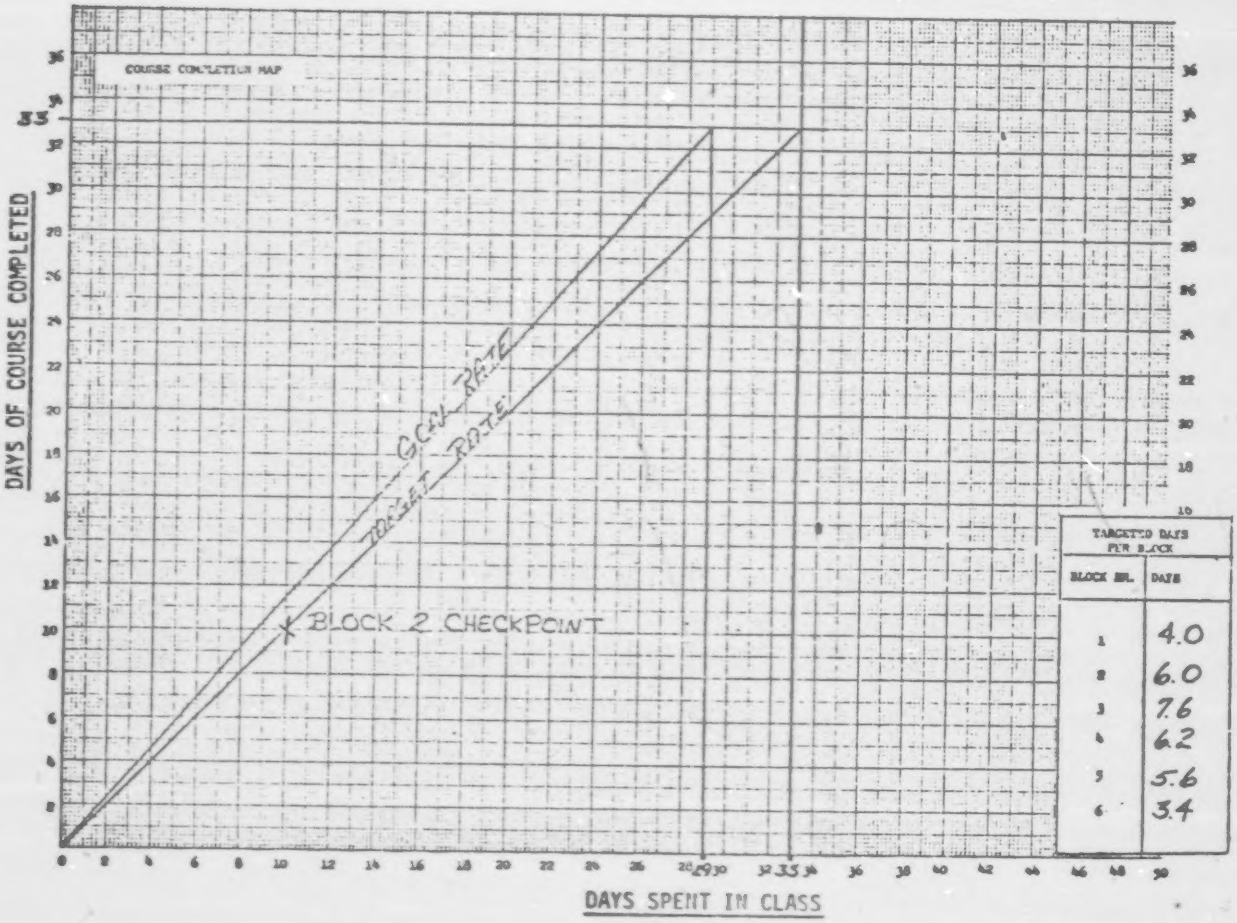

I NEED TO HAVE A PROGRESS COUNSELING SESSION WITH YOU, SIR.
GOOD, I WAS JUST COMING TO SEE YOU.

For example, Joe's Target Completion Day is 33 days but let's suppose that he wants to complete the course in 29 days in order to be home for his sister's wedding. He, therefore, contracts with his instructor to complete the course in 29 days instead of 33 and he draws a Goal Rate line on his Course Completion Map.


JOE'S TARGET COMPLETION GOAL: 33 days
X
SISTER'S WEDDING
JOE'S PERSONAL GOAL: 29 DAYS

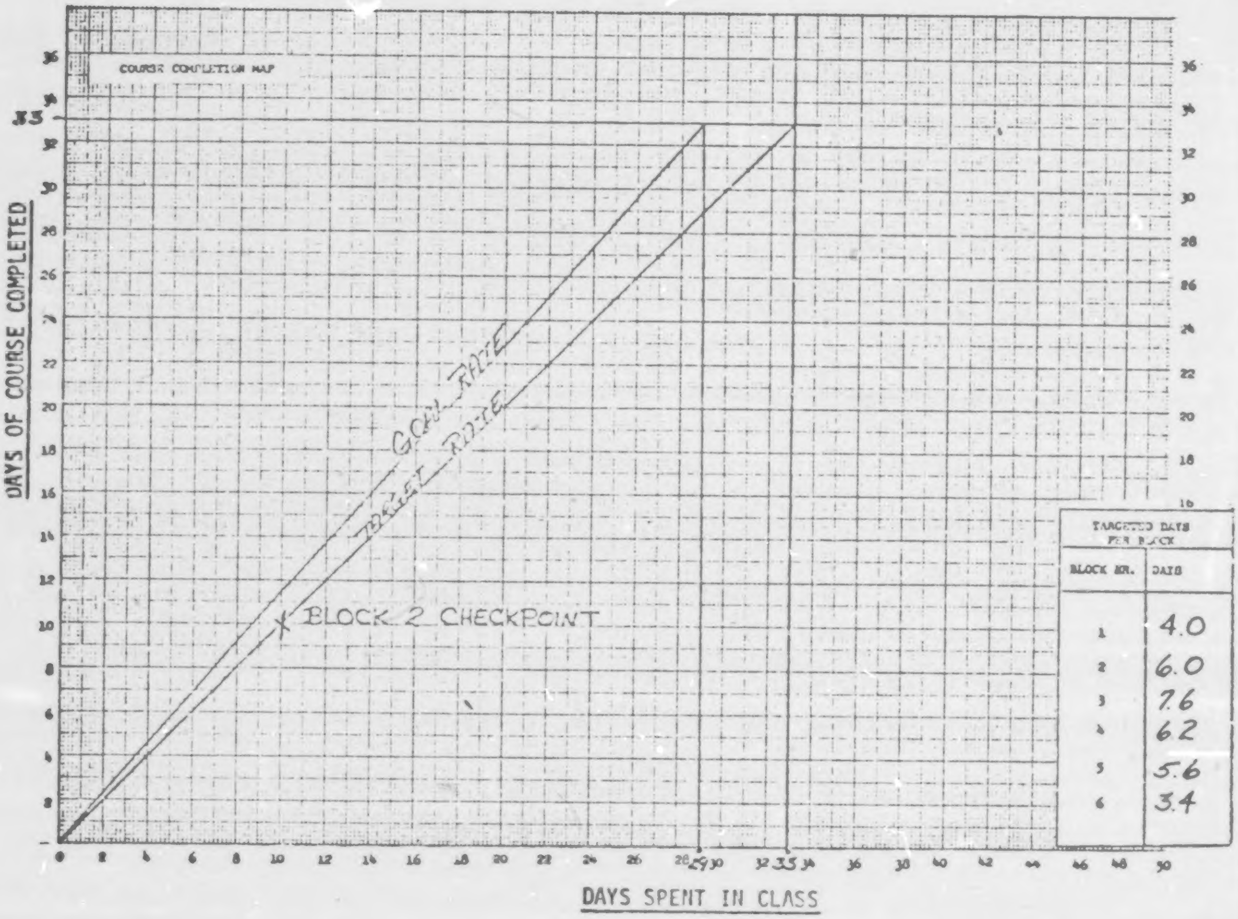
85

"And what," you ask, "is a Goal Rate line and how do I draw such a critter?" A Goal Rate line is a line indicating the rate which a student sets for himself. (This rate is either the same as, or faster, than the rate set for him by the computer.) In other words, it is a personal goal which a student sets for himself at the Block 2 Checkpoint. When a Goal Rate is set, the Target Rate need not be changed until the Graduation Date Checkpoint. This allows the student some flexibility to see which target is more comfortable for him/her.



TARGETED DAYS PER BLOCK	
BLOCK NR.	DAYS
1	4.0
2	6.0
3	7.6
4	6.2
5	5.6
6	3.4

To make sure you know how easy this is, draw a Goal Rate line on Joe's Course Completion Map using a goal of 29 days. Use the following instructions to help you. First, locate the graduation goal (29 days) on the horizontal line. Second, draw a very light line up the graph from this point until it crosses the light line you drew to make your Target Rate line. Third, draw a heavy line from the point where these two lines cross to the point where the vertical line and the horizontal line meet. Fourth, label this line "Goal Rate."



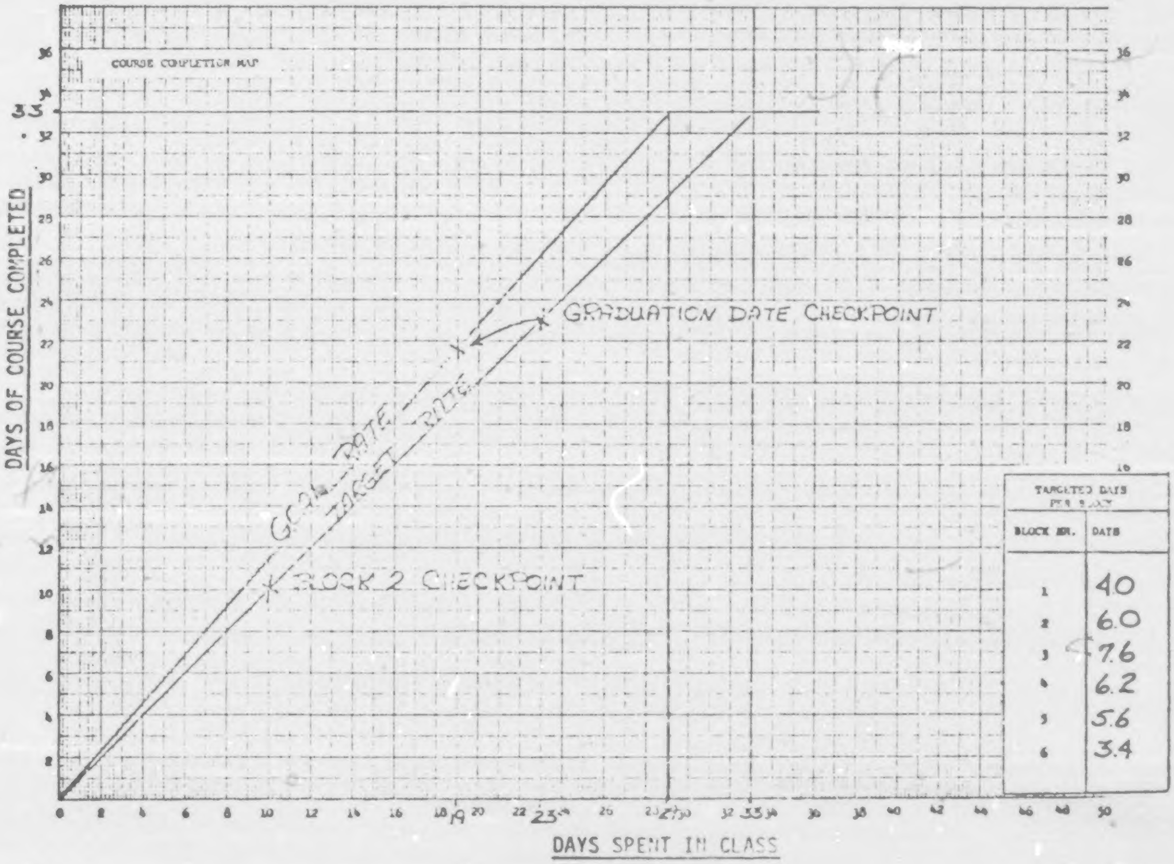
TARGETED DAYS PER BLOCK

BLOCK NR.	DAYS
1	4.0
2	6.0
3	7.6
4	6.2
5	5.6
6	3.4

The second checkpoint is the Graduation Date Checkpoint. At this point, Joe will meet with his instructor to set a graduation date on the calendar. This is very important because the records and orders of a student who graduates on time are ready then. If a student fails to graduate on time, s/he has to walk all over the base to run his/her clearance.

To indicate the Graduation Date Checkpoint, subtract 10 from Joe's Target Completion day. (The number 10 is used for all students as it takes the Air Force about 10 days to process a set of records); 10 from 33 equals 23. Locate 23 on the horizontal line and following this line up the graph, make another X on the Target Rate. This is the Graduation Date Checkpoint. Please label this X "Graduation Date Checkpoint."

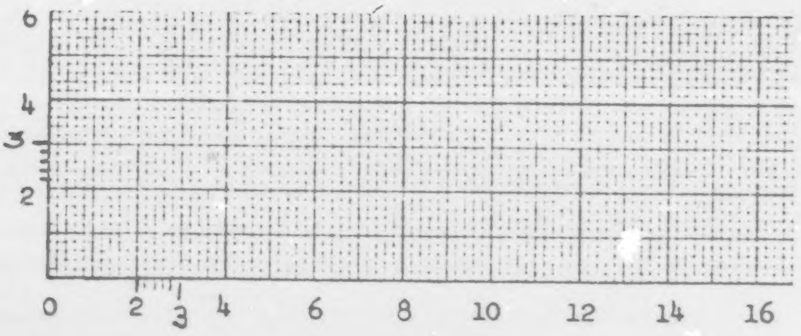
When you draw a Goal Rate line, you will have to mark a Graduation Date Checkpoint on the Goal Rate line. To do this, subtract 10 from the new goal (29 in Joe Student's example). 29 - 10 = 19. Notice in the diagram below that the arrow indicates how the Graduation Date Checkpoint has moved down from 23 to 19.



At the Graduation Date Checkpoint, there are again several things which you must do. (1) Answer each question on the back of your Course Completion Map by checking either "yes" or "no" in the "Grad. Date" column. (2) Based on your answers to these questions, decide if you are going to graduate on schedule. (3) Meet with your instructor to set Graduation Date on the calendar.

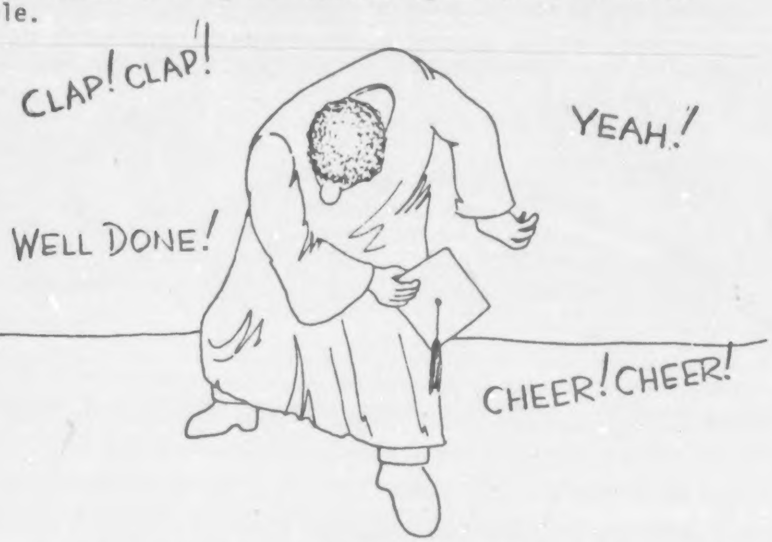
One more thing is important for you to know: Look at the diagram below. You will notice that between lines 2 and 3 on the vertical and the horizontal lines there are 5 lines. Each of these lines equals 2/10ths of a day. So the first line after line 2 equals 2.2 days. The second line after line 2 equals 2.4 days. The third line after line 2 equals 2.6 and the fourth line after line 2 equals 2.8.

The fifth line after line 2 is the number 3 line.

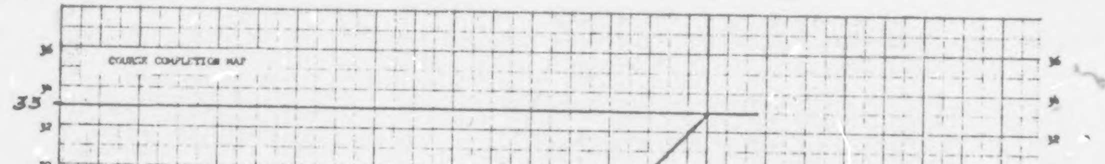


89

You have now completed the first part of a Course Completion Map. CONGRATS! Please remember: The Block 2 Checkpoint and the Graduation Date Checkpoint are scheduled Progress Counseling Sessions for which you are responsible.


CLAP! CLAP!
YEAH!
WELL DONE!
CHEER! CHEER!

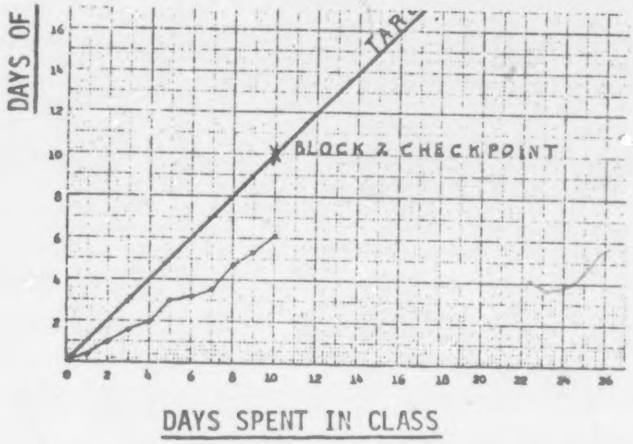
Now, fill in your own Course Completion Map. There are 4 items that need to be marked: (1) Target Rate line, (2) Target Completion Times for each Block, (3) Block 2 Checkpoint, and (4) Graduation Date Checkpoint. Remember: All the information you need to do this is on the prescription which your instructor received today. Please get this information from your instructor ASAP!



TARGETED DAYS PER BLOCK

BLOCK NR.	DAYS
1	4.0
2	6.0
3	7.6
4	6.2
5	5.6
6	3.4

OK, now you may be wondering what Joe does if he cannot keep up with the Target Rate. There are 3 basic reasons that this may happen: (1) Joe is goofing off; (2) Joe has personal problems which keep him from his work; (3) the Target Rate is incorrect. These are the same reasons why you may not keep up with your Target Rate.



Reasons 1 and 2 (you are goofing off or have personal problems) are handled by the student signing a Performance Contract with the instructor. This contract requires the student to get back on schedule by a specific day. In order to do this, a student may have to attend special classes after normal training time.

It must be remembered, moreover, that the ATC regulations clearly state that a student is required to spend 8 hours per day studying. Since you are in class 6 hours, you are required by your employer, the Air Force, to spend 2 hours studying outside of class.

Remember: A student is expected to spend at least 8 hours per day studying.

If a student signs 2 performance contracts and has still been unable to show any significant progress, the instructor may assign the student to bed check or extra study sessions. That is, if a student is behind schedule and does not get back on schedule in a reasonable amount of time, it is assumed that s/he is not studying 8 hours per day. Students who will not take the responsibility for studying 2 hours after normal training time will be assigned 2 hours of supervised study sessions each day.

Reason #3 for not keeping up with your Target Rate is that the Target Rate is incorrect. If you believe that the Target Rate is incorrect, you must convince the instructor that you have been working as fast as possible. Unless you can prove that you're working at top speed, a Performance Contract will be called for. If, however, you convince the instructor that you are working as fast as possible, the two of you may then talk about a new Target Rate.

REMEMBER: A Performance Contract is required when a student falls behind his/her Target Rate by 2 or more days due to personal problems or lack of motivation (goofing off). This contract is an informal agreement between a student and an instructor which requires the student to be back on schedule by a specific day.

REMEMBER: A Performance Contract is recorded on the back of your Course Completion Map.

HELP
YES, JOE, I HAVE SEVERAL WAYS TO HELP YOU
CONTRACT

Now, the only other thing that you need to know to complete your Course Completion Map is how to plot your daily progress. The first prescription you get from the computer each day will tell you how far ahead or behind schedule you are working. This report will be stated in days and you will plot that number on your Course Completion Map.

Below is a copy of Joe Student's first prescription for day 7115. The information within the brackets is the daily progress report for Airman Student. According to this report, Joe has completed 6.0 days of the course and has spent 5.8 days in class.

```
STUDENT, JOE     000-00-3334  day 7115,  0630 hrs
    Home Carrel # 2, Learning Center 6, Shift 1
    INVENTORY MANAGEMENT, Block 2

    Days of course completed 6.0
    Days spent in class 5.8

YOUR NEXT ASSIGNMENT IS:  Lesson 001-02-02, Module 02.
 Item Identification.     Attempt #1.
You will need these resources:
   1.  Sound Filmstrip Unit (in Learning Center 7).
You will be expected to take the following tests:
   Mastery Test #4
GOOD WORK  //
```

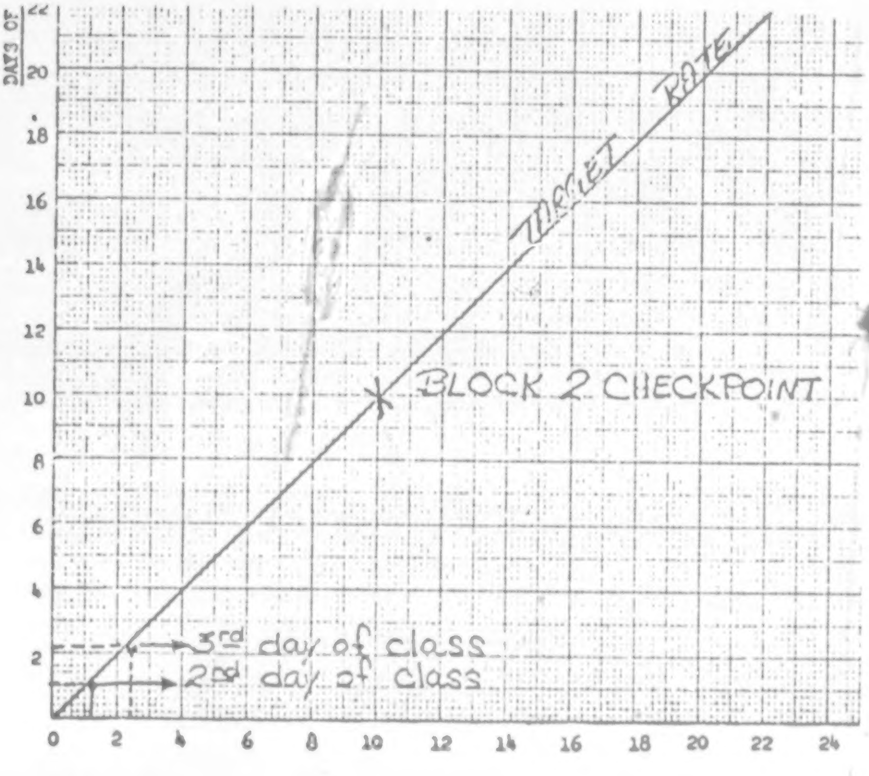
Now, let's suppose that Joe Student's first prescription on his second day of class states that "Days of Course Completed" is 1.0, and "Days Spent In Class" is 1.2.

To mark his progress, get Joe's Course Completion Map. Locate the 1.0 on the vertical line (line labeled "Days of Course Completed). Locate the number 1.2 on the horizontal line (line labeled "Days Spent In Class"). Mark a dot at the point where these two lines cross.

Now on Joe's third day of class his first prescription reads:

Days of Course Completed: 2.2
Days Spent in Class: 2.4

To plot this, locate 2.2 on the vertical line. Locate 2.4 on the horizontal line. Mark a dot at the point where these two lines cross.



On Joe's fourth day of class, his first prescription reads:

Days of Course Completed: 3.6
Days Spent In Class: 3.8

To plot this, locate 3.6 on the vertical line. Locate 3.8 on the horizontal line. Mark a dot at the point where these 2 lines cross.

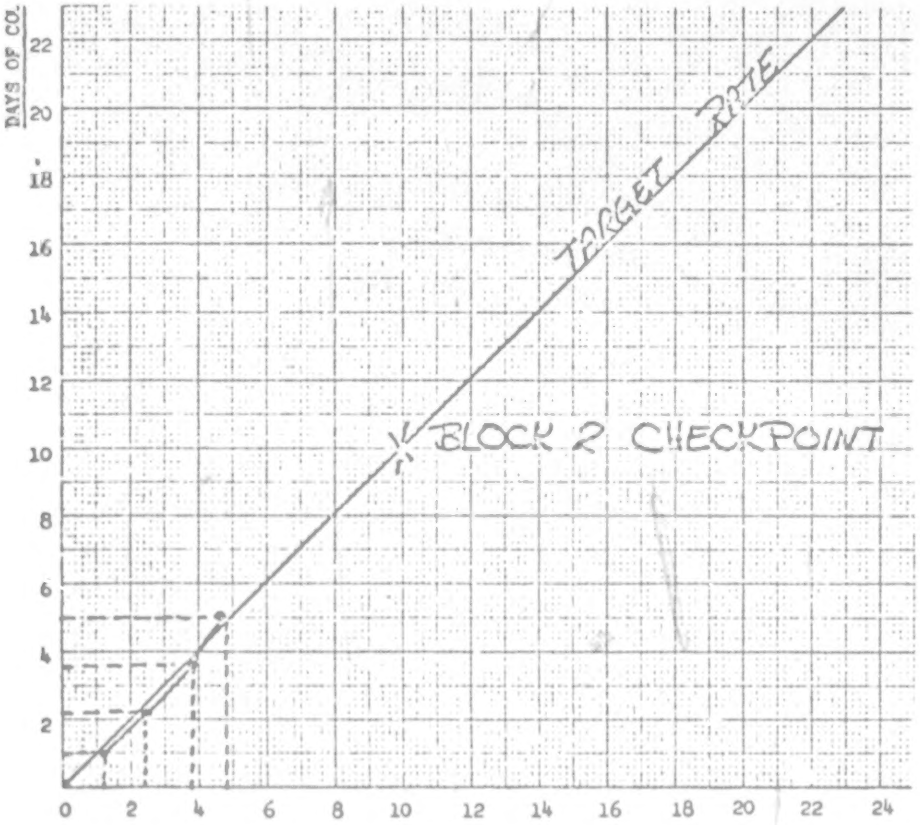
On Joe's fifth day of class, his first prescription reads:

Days of Course Completed: 5.0
Days Spent In Class: 4.8

Plot this on Joe's Course Completion Map. Remember: vertical line = Days of Course Completed and horizontal line = Days Spent In Class.

Now connect the dots with short lines. As you can see, Joe Student was working a little behind schedule at first but closed the gap each day until day 5 when he is ahead of schedule.

In order to keep an up-to-date progress record, you MUST chart your progress each day.



Let's take a minute now to review this whole process. On the first day of the course (today) you will receive your Target Rate as set by the computer. On the Course Completion Map (1) draw your Target Rate line, (2) indicate your completion times for each block, and (3) indicate your Block 2 Checkpoint and your Graduation Day Checkpoint. After receiving your daily progress report at the beginning of each class day, plot how far ahead or behind schedule you're working.

Day 1: Draw Target Rate Line
Mark Block 2 Checkpoint
Mark Graduation Date
Checkpoint

Day 2 → Graduation: Plot daily
progress as indicated by
computer

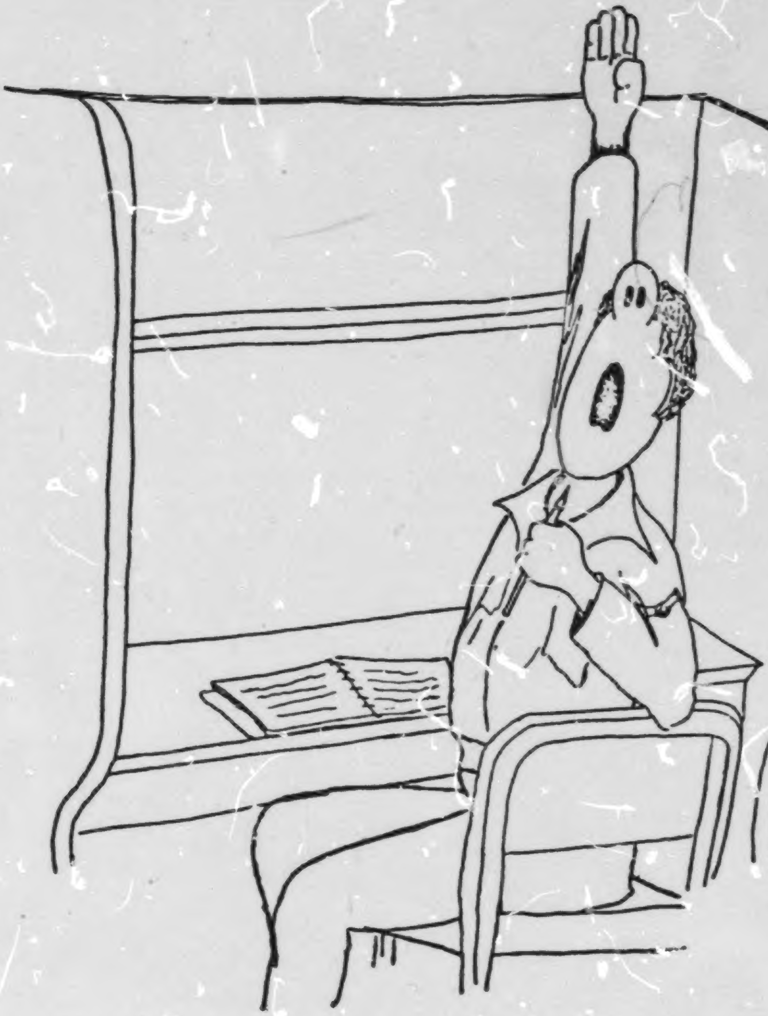
REMEMBER: A point below the Target Rate line indicates you are behind schedule. A point above the Target Rate line indicates you are ahead of schedule.

At the end of Block 2, you will go to your instructor for a Progress Counseling Session. During this meeting, the two of you will discuss your progress in the course. Ten days before your Target Graduation day you will again go to your instructor for a Progress Counseling Session, and during this meeting, the two of you will set a graduation date on the calendar.

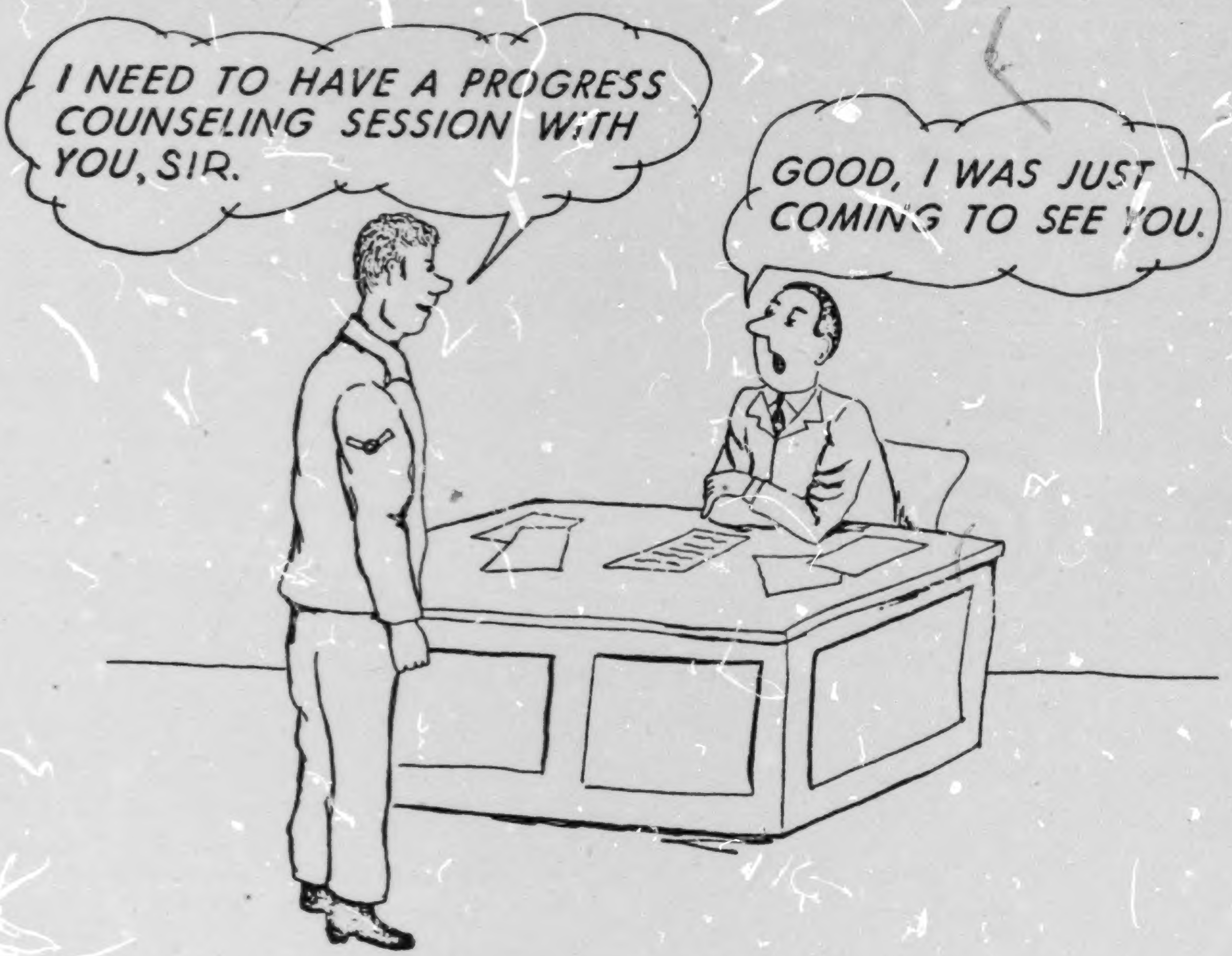
Day _: Block 2 Checkpoint
requested by student

Day _: (10 days before Target
Graduation day) Graduation
Date Checkpoint requested
by student.

"And what," you may ask, "am I to do if sometime before the first checkpoint (meeting with my instructor), I find that I am unable to stay on schedule. ANYTIME THAT YOU ARE MORE THAN 2 DAYS BEHIND SCHEDULE, YOU MUST SET UP A PROGRESS COUNSELING SESSION WITH YOUR INSTRUCTOR. Remember, contact your instructor as soon as you find that you are more than 2 days behind schedule.

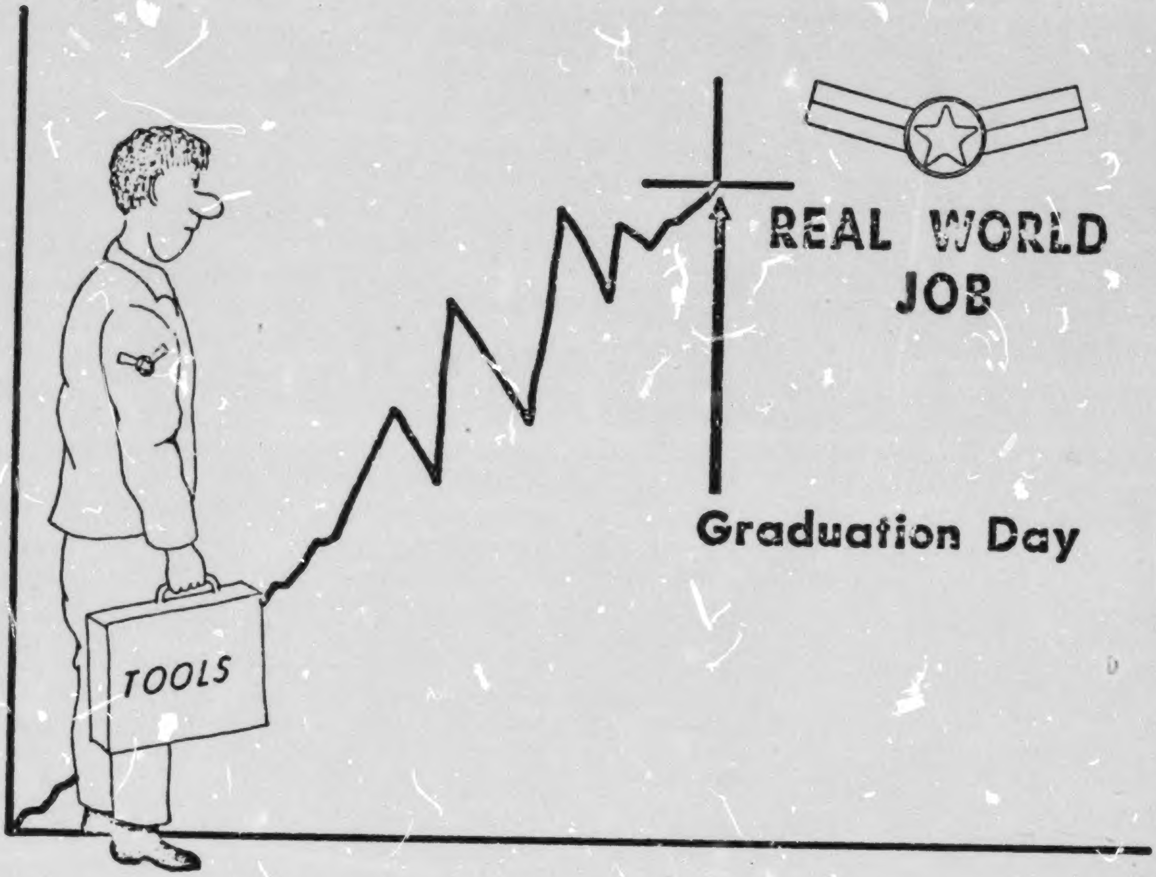


In fact, if at any time during the course you feel that you are either far above or below your goals, please discuss the situation with your instructor (Progress Counseling Session). If you do not do this (not you!), your instructor will contact you, as s/he receives a list from the computer each day telling him/her how far ahead or behind each student is working. This enables instructors to identify potential problems early and solve them early.


I NEED TO HAVE A PROGRESS COUNSELING SESSION WITH YOU, SIR.
GOOD, I WAS JUST COMING TO SEE YOU.

Finally, remember that you are the one who is responsible for what you learn in this course. It is to your benefit, as well as to the benefit of the Air Force, to finish this course as quickly as possible so that you can become a productive member of an operational unit and save hard-to-get defense dollars. You have the personal challenge of doing well in the course while finishing it ASAP. You have the tools to do it - so let's get on with it.

Your next step is to take a test on the information you have just read. Take the 2 maps you have just drawn (Joe Student's and your own) to your instructor and ask for the CPC for the Time Management lesson.



99

APPENDIX B

SUMMARY OF
HOW TO BE A SUCCESSFUL STUDENT IN A COMPUTER-MANAGED INSTRUCTIONAL (CMI) SYSTEM

- CMI is a new educational method in which the main student skill required is responsibility.

- Objectives tell you what information or skills you should have when you complete the assigned lesson.

- Instructors are in the learning centers to help you with your problems, answer your questions, encourage you and counsel you.

- Efficient students usually do the following things:

  1. Read the objectives before and after each lesson.
  2. Use the quizzes to test their knowledge.
  3. Plan a study schedule each day which includes some study time outside of class.
  4. Take notes only on the major points to be remembered or information that is confusing.
  5. Use embedded questions to test if they have been concentrating and understanding the material.
  6. Take breaks only when they feel tired or bored.
  7. Make a commitment to work towards their course completion goal and keep track of their daily progress.
  8. Try to get themselves into a good study mood (relaxed yet alert) whenever they are studying.
  9. Deal with "down days" by remembering both their course goals and their long range personal goals and by making up for those "down days" by working harder the next day and/or studying more after class.
  10. Ask their instructor for help when they have a problem which they can't solve by themselves.
  11. Try not to worry about problems over which they have no control.
  12. Put a lot of work into a CMI system, but also get a lot out of it.

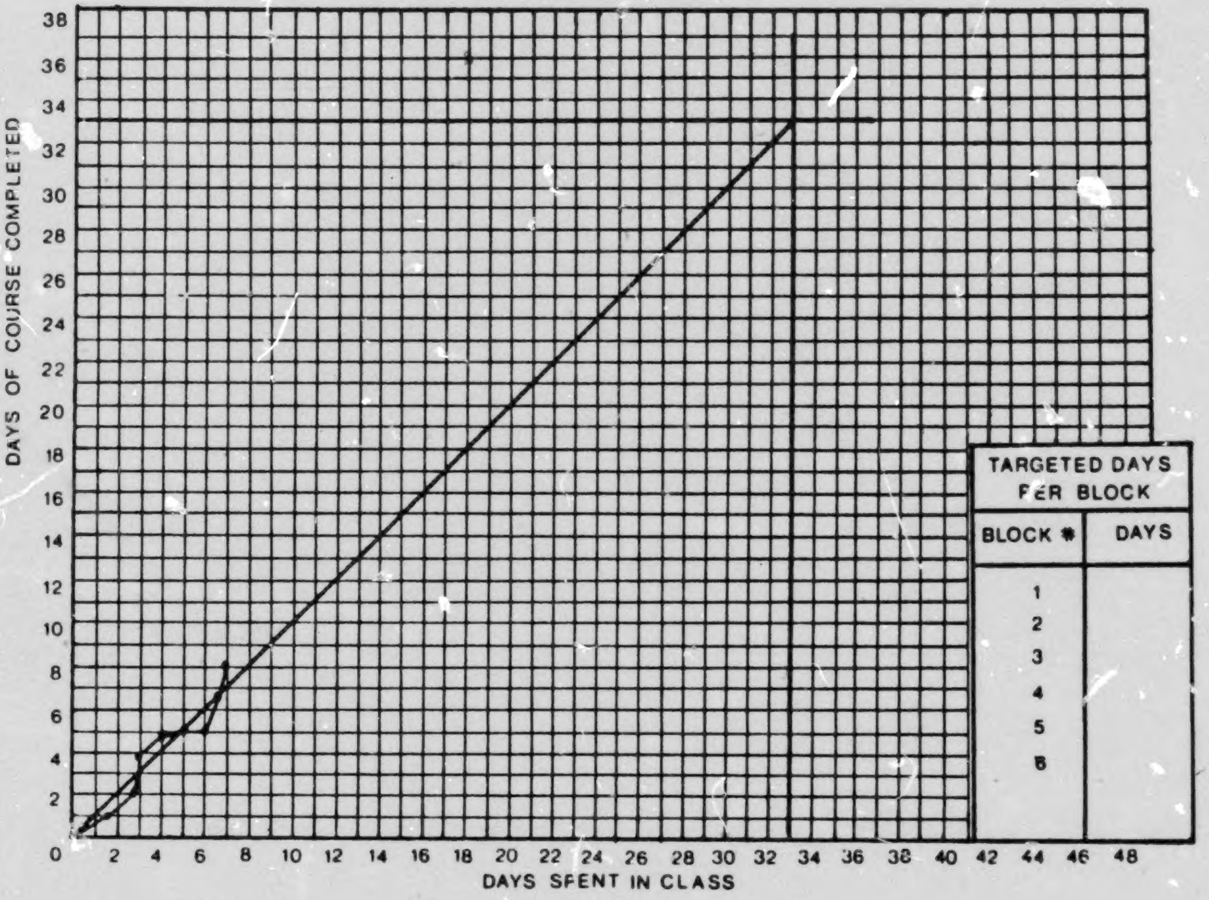
- In military technical training, the emphasis is on learning the objectives rather than working for high grades. This ensures that students can do their jobs in the field but are not overtrained.

- It is your responsibility to get through the course as quickly as possible and to keep up passing grades.

- A good time management technique is to set up a schedule for completing this course and then make a daily check of how closely you are keeping on schedule.

- Finishing the course as quickly as possible is important because it is very expensive to train military personnel and as a member of the military team, it is your responsibility to help cut costs whenever possible.

COURSE COMPLETION MAP



TARGETED DAYS PER BLOCK	
BLOCK #	DAYS
1	
2	
3	
4	
5	
6	

	BLOCK 2 CHECKPOINT		GRAD. DATE CHECKPOINT	
	YES	NO	YES	NO
1. Are you close to your Target Rate?				
2. If you are behind, do you see a way to get back on schedule fairly easily?				
3. If you are right on schedule, do you think you can improve your pace?				
4. If you are ahead of the Target Rate do you think you can continue at this pace and finish a little early?				
5. Given your answers to the above questions, what would be a reasonable but challenging goal? (Grad. date?)				

NOW GO SEE YOUR INSTRUCTOR

****

PERFORMANCE CONTRACT RECORD

DATE ______: I am _____ days behind my Target Rate and agree to be back on schedule by ______________________________.

DATE ______: I am _____ days behind my Target Rate and agree to be back on schedule by ______________________________.

DATE ______: I am _____ days behind my Target Rate and agree to be back on schedule by ___________________________________.

MF TIME SHEET MF TIME SHEET MF TIME SHEET

This chart tells you the average time which students, who take 5 weeks to complete the course, spend on each lesson. You can use this information to figure out how much time you should take to complete each lesson. If you want to finish the course in less than 5 weeks, you will have to take less time on each lesson. A student who wants to complete the course in 20 days will take less time on each lesson than the amount given on this time sheet. A student who wants to complete the course in 18 days will take even less time on each lesson.

Block 1	Block 2	Block 3
Lesson 1: 110 min. 2: 90 " 3: 120 " 4: 170 " 5: 70 " 6: 310 " 7: 120 " 8: 170 " 10: 160 " 13: 110 "	Lesson 1: 140 min. 2: 130 " 3: 50 " 4: 230 " 5: 320 " 6: 200 " 7: 190 " 8: 110 " 12: 200 " 13: 100 "	Lesson 1: 130 min. 2: 180 " 3: 220 " 4: 190 " 5: 220 " 6: 200 " 7: 200 " 12: 270 " 13: 130 "
Block 4	**Block 5**	
Lesson 1: 130 min. 2: 70 " 3: 80 " 4: 110 " 5: 100 " 6: 50 " 7: 80 " 8: 40 " 9: 40 " 10: 60 " 12: 80 " 13: 110 "	Lesson 1: 90 min. 2: [illegible] min. 3: 120 min. 4: 140 " 5: 170 " 6: 70 " 7: 120 " 12: 250 " 13: 90 "	

IMPORTANT THINGS TO REMEMBER

Block 2 Checkpoint is a Progress Counseling Session which the student must request at the end of Block 2.

Graduation Date Checkpoint is a Progress Counseling Session which the student must request 10 days before his/her Target Completion Day.

A Goal Rate is a student's personal rate for finishing the course. A Goal Rate is always faster than or equal to the Target Rate.

To plot your daily progress, locate the "Days of Course Completed" number on the vertical line. Locate the "Days Spent In Class" number on the horizontal line. Mark a dot at the point where these two lines cross.

A dot below the Target Rate line indicates you are behind schedule. A point above the Target Rate line indicates you are ahead of schedule.

APPENDIX E

Orientation/Time Management Criterion Test Form #1

Use AIS Module Test Form #3

Correct Response is "N"

Form #1

CRITERION TEST FOR TIME MANAGEMENT MODULE

1. A good way to manage your time is to

   a. make sure you completely understand all new material.
   b. take each day at a time and don't worry about the future.
   c. chart or plot your progress each day from the starting time to the finish time.
   d. set your goals higher than you think you can make.

2. To plot your daily progress, you get information about "Days Spent In Class" and "Days of Course Completed" from

   a. your instructor.
   b. the first prescription you get from the computer each day.
   c. the last prescription you get from the computer each day.

3. If your prescription says: Days of Course Completed: 4.4
   Days Spent In Class: 4.6

   you should plot the 4.4 on the _________ line.

   a. Days Spent In Class
   b. Days Ahead of Schedule
   c. Days Behind Schedule
   d. Days Remaining
   e. Days of Course Completed

4. The computer in this course

   a. helps you set the characteristics of a Performance Contract.
   b. charts your progress on your Course Completion Map.
   c. sets Progress Counseling Sessions for you.
   d. helps you tell if you are working ahead or behind your Target Rate.

5. The prescription (Student Status Report), which you get at the beginning of each class session, gives you information about your progress. What should you do with this information?

   a. Keep it in a notebook.
   b. Give it to the instructor.
   c. Talk about it at a Progress Counseling Session.
   d. Plot it on a Course Completion Map.

6. The Block 2 Checkpoint and Graduation Date Checkpoint are scheduled

   a. Progress Training Sessions.
   b. Progress Counseling Sessions.
   c. Remedial Training Sessions.
   d. Performance Contract Sessions.

7. Susie Student's Target Days In Course is 30 days. This means that Susie

   a. will get her diploma 30 days after starting the course.
   b. is targeted to complete the course in 30 days.
   c. cannot take more than 30 days to complete the course.
   d. will graduate in 22 days (30 - 8 = 22).
   e. is supposed to spend at least 30 days in the course.

8. "Target Days per Block"

   a. defines when the student will graduate from each block.
   b. does not change at any time during the course.
   c. is an estimate of how difficult a specific student may find each section of the course.
   d. defines how long a student must spend in each section of the course.

9. A Goal Rate line is

   a. a personal goal rate which is slower than the rate set by the computer.
   b. the rate set by the computer which tells a student when s/he should complete the course.
   c. a rate of progress set for a slow student by an instructor.
   d. a rate of progress which an instructor sets for a student.
   e. a personal goal rate which is faster than the rate set by the computer.

10. The 3 reasons for which a student may not be able to keep up with his/her Target Rate are: (1) The student has personal problems. (2) The Target Rate is incorrect. (3)

    a. The computer made a mistake.
    b. The student is goofing off.
    c. Remedial training is not being assigned.
    d. Remedial training is required.

11. A Performance Contract is an informal agreement between a student and an instructor. This contract requires

    a. that the Target Rate be changed.
    b. that the student attend remedial study sessions.
    c. that the instructor tutor the student.
    d. that the student get back on schedule by a specific day.

12. If a student falls behind his/her Target Rate, a Progress Counseling Session, remedial training and/or __________ may be required to get back on schedule.

    a. Performance Contract
    b. Target Rate Checkpoint
    c. Block 3 Checkpoint
    d. Target Contract

13. Who is responsible for what you learn in this course?

    a. Your instructors are responsible.
    b. The head of the school is responsible.
    c. You are responsible.
    d. The Department of Defense is responsible.

14. Below is the prescription for Susie Student. On the Course Completion Map, mark Susie's Target Rate, Target Days per Block, Block 2 Checkpoint and Graduation Date Checkpoint.

```
STUDENT, SUSIE        000-00-3334        day 7110   0953 hrs
PREASSESSMENT COMPLETE    //

Targeted Days in Course 27

Targeted Days Per Block
    Block     Days
      1        3.4
      2        4.8
      3        6.4
      4        4.0
      5        4.6
      6        3.6
```

15. Below is information on the daily progress of John Trainee. Plot his daily progress for the first 5 days of the course using the information in the box.

Day 1: Days of Course Completed: 1.2
Days Spent in Class: 1

Day 2: Days of Course Completed: 2.4
Days Spent in Class: 2

Day 3: Days of Course Completed: 3.2
Days Spent in Class: 3

Day 4: Days of Course Completed: 3.8
Days Spent in Class: 3.8

Day 5: Days of Course Completed: 5.0
Days Spent in Class: 4.6

APPENDIX F

Orientation/Time Management Criterion Test Form #2

Use AIS Module Test Form #3

Correct Response is "P"

Form #2

CRITERION TEST FOR TIME MANAGEMENT MODULE

1. If Susie Student is targeted to complete the course in 25 days, her Target Days In Course (as printed on her prescription) will be

   a. 10.
   b. 15.
   c. 20.
   d. 25.

2. A personal course completion rate which is faster than the rate set by the computer is the

   a. Completion Rate.
   b. Performance Contract.
   c. Goal Rate.
   d. Target Rate.

3. There are 3 activities which may be required of a student who falls behind his/her Target Rate. (1) A Progress Counseling Session will be initiated. (2) A Performance Contract may be signed. (3)

   a. The supervised study may be assigned.
   b. The Target Rate will automatically be reset.
   c. The student will be discharged.
   d. The student will be moved to another learning center.

4. The 2 scheduled Progress Counseling Sessions which each student must request are

   a. Block 1 Checkpoint and Graduation Date Checkpoint.
   b. Block 2 Checkpoint and Graduation Date Checkpoint.
   c. Block 1 Checkpoint and Mid Course Checkpoint.
   d. Block 2 Checkpoint and Mid Course Checkpoint.

5. If a student falls behind schedule, s/he will sign a __________ which requires him/her to be back on schedule by a specific day.

   a. Target Rate Contract.
   b. Progress Counseling Session Contract
   c. Performance Contract
   d. Performance Analysis

6. __________ are responsible for what you learn in this course.

   a. You
   b. The instructors
   c. The military counselors
   d. The course supervisors

7. If your prescription says: Days of Course Completed 6.8
   Days Spent in Class 6.2

   You should plot the 6.2 on the __________ line.

   a. Days Spent in Class (horizontal)
   b. Days Ahead of Schedule
   c. Days of Course Completed (vertical)
   d. Days Behind Schedule

8. The __________ prescription you get from the computer each day will give you information about "Days of Course Completed" and "Days Spent In Class."

   a. CPC
   b. last
   c. target
   d. first
   e. Block

9. What does the computer in this course do to help students manage their time?

   a. Helps students set Performance Contracts.
   b. Helps students tell if they are working ahead or behind their Target Rates.
   c. Arranges Progress Counseling Sessions.
   d. Charts student's progress on their Course Completion Maps.

10. What should you do with the prescription which gives you your daily progress information?

    a. Save it to use in a Progress Counseling Session.
    b. Put it in a progress notebook.
    c. Plot the information on a Course Completion Map.
    d. Give it to the instructor.

11. An estimate of how difficult a specific student may find each block of the course is given in the

    a. Target Days in Course.
    b. Block averages.
    c. Target Days per Block.
    d. Progress Counseling Sessions.

12. The 3 reasons for which a student may not be able to keep up with his/her Target Rate are: (1) The student is goofing off. (2) The student has personal problems. And (3)

    a. Remedial training is not being assigned.
    b. The Target Rate is incorrect.
    c. Remedial training is required.
    d. The student doesn't care.

13. Plotting or charting your daily progress is a good way to

    a. communicate with your instructor.
    b. establish performance goals.
    c. understand new material.
    d. compete with fellow students.
    e. manage your time.

14. Below is Susie Student's original prescription. On a Course Completion Map, mark Susie's Target Rate, Target Days per Block, Block 2 Checkpoint and Graduation Date Checkpoint.

```
STUDENT, SUSIE        000-00-3334          day 7110      0932 hrs.
PREASSESSMENT COMPLETE    //

Target Days In Course  23

Target Days per Block

    Block        Days
      1          2.4
      2          3.4
      3          5.6
      4          4.6
      5          3.4
      6          3.2
```

15. Below is information on the daily progress of John Trainee. Plot his daily progress for the first 5 days of the course using the information in the box.

Day 1: Days of Course Completed .6
Days Spent in Class .8

Day 2: Days of Course Completed 1.2
Days Spent In Class 1.6

Day 3: Days of Course Completed 2.2
Days Spent In Class 2.2

Day 4: Days of Course Completed 3.2
Days Spent In Class 3.0

Day 5: Days of Course Completed 4.6
Days Spent In Class 3.8

APPENDIX G

GLOSSARY OF TERMS

ADAPTIVE MODEL - Consists of a set of computer programs that generate Individual Instructional Assignments, predict and assign individual block and course completion time targets (Student Progress Management), allocates training resources and is the vehicle for accomplishing continual test and courseware evaluation and refinement.

ADVANCED INSTRUCTIONAL SYSTEM (AIS) - A prototype, comprehensive computer-managed and computer-assisted instructional system to provide the following automated capabilities in support of large scale training: Individual Instructional Assignments, Student Progress Management, resource allocation and scheduling, information storage and report generation and evaluation and research.

ALTERNATIVE MODULES - Modules utilizing different instructional approaches from previously existing modules to meet the specific needs of particular types of students and/or certain course requirements. (See Instructional Module).

BLOCK - A course component comprised of lessons and modules that cover a specific subject/content area and normally ends with a comprehensive test.

BLOCK COMPLETION/ELAPSED TIMES - The period of time from inception of a block's first lesson or lesson group through completion of the block test.

COMPUTER-MANAGED INSTRUCTION (CMI) - Use of the computer to manage students through the instructional process. The computer's role is that of a diagnostician and manager of instructional events. Through the Adaptive Model, it generates Individual Instructional Assignments (IIAs), predicts and assigns individual block and course completion times, allocates training resources and evaluates tests and courseware. The utilization ratio is 100 students per management terminal.

COMPUTER SOFTWARE - A logical grouping of programmed computer codes that gives commands to a computer to perform a particular function. A unique AIS software component is the Computer Assisted/Managed Instructional Language (CAMIL) that facilitates both CAI and CMI.

CONVENTIONAL TRAINING - Classroom and/or laboratory training conducted in a previously established and accepted manner, i.e., usually a classroom lecturer and/or laboratory instructor-student group relationship in a lock-step mode of progress.

GLOSSARY OF TERMS (Continued)

COURSE - A block or a series of blocks of instruction designed to satisfy Specialty Training Standards for a particular Air Force Specialty Code and skill level. Formal, resident training conducted at an Air Training Command installation.

COURSE COMPLETION PREDICTIONS - A computer-generated estimate of a student's time required to complete the course based upon Preassessment Testing. Predictions may be made for completion of modules, lessons, or blocks as well as for the entire course.

COURSE COMPLETION TARGET - A course completion prediction adjusted for course policy regarding the desired minimum, maximum and average course completion times.

COURSE COMPLETION TIMES - Measured classroom time from course entry to graduation.

COURSE DATA BASE - A collection of computerized files containing the parameters and flags which control the operation of the Adaptive Model for a specific course.

CRITERION-REFERENCED TESTING - A testing methodology in which test items are written to assess student performance on defined behavioral objectives with respect to a specified standard of mastery (e.g., 70 percent correct).

CRITERION VARIABLES - Measures of student performance, times and score, on lesson and block tests.

DAILY ROSTER - A computer generated listing of students assigned to a specific learning center, their assigned carrel numbers, current block of instruction, and rate of progress relative to their target course completion rate.

FIRST ATTEMPT BLOCK FAILURES - A computer produced list of the number of students who fail to meet criterion on their first attempt to pass an end-of-block test.

FORMATIVE EVALUATION - That type of evaluation research whose purpose is to detect weaknesses in instructional materials or procedures and provide a basis for correcting such weaknesses.

INDIVIDUALIZATION - See Individualized Instructional Assignment.

INDIVIDUALIZED INSTRUCTIONAL ASSIGNMENT - The AIS/CMI capability to assign individual students to alternative modules of instruction for a lesson in order to achieve optimal performance from each student.

GLOSSARY OF TERMS (Continued)

INSTRUCTIONAL MATERIALS - Printed, audio, or visual information used in instruction. Includes programmed texts, picture books, workbooks, audio visuals, checklists, technical orders and tests.

INSTRUCTIONAL MODULE - A specific package of instructional materials and related training resources for presentation of a specific AIS lesson. A lesson may have more than one instructional module. All modules for a lesson teach the same objectives but differ in the method of presentation and/or strategies used.

INTEGRATED SYSTEM TEST - An evaluation of the Advanced Instructional System designed to provide quantitative answers regarding the training time reductions resulting from certain Computer Managed Instruction (CMI) functions of the AIS.

INTERACTIVE (A) TERMINAL - Consists of a plasma display and keyboard and is used by instructors and course authors to interact with the AIS central computer and data files and by students for on-line, adaptive testing and CAI.

LEARNING CENTERS - A learning environment to which students are assigned for attendance-taking purposes and in which most coursework is conducted. Consists of carrels, media and job related equipment and/or simulators designed to support individualized instruction.

LESSON - A component of a block of instruction. Contains instructional information to enable achievement of a learning objective or series of objectives. A lesson is learned through the use of one or more specific instructional modules.

MANAGEMENT (B) TERMINAL - Consists of a forms reader, printer and minicomputer and is used to read and score test forms, transmit data to and receive information from AIS central computer, and print student prescriptions and management reports.

MODULE - The smallest testable unit of instruction within a block of instruction. A set of instructional materials which applies a specific instructional approach for teaching a lesson. (See Instructional Module).

OPERATIONAL TRYOUT - Defined for the project, as a second phase of the formative evaluation accomplished by a large-scale evaluation. During this phase the primary consideration was the effect of the treatment on the subjects' subsequent behavior.

GLOSSARY OF TERMS (Continued)

PREDICTOR VARIABLES - Measures of student abilities, aptitudes, interests, personality, or past performance which are expected to be related to criterion variables of interest (e.g., student times or scores).

PREASSESSMENT DATA - The results of a test battery given to students before they begin a course. The battery is designed to measure student abilities, attitudes, interests and backgrounds. Preassessment data, in conjunction with Within-Course Testing is used for Individualized Instructional Assignment and Student Progress Management.

PRESCRIPTION - A computer generated student status report indicating the student's performance on his/her last assignment, his/her next assignment and related training resources required, if any.

RANDOM ASSIGNMENT - The option to specify the percentage of students who should be assigned randomly to the alternative module for a lesson. Provides experimental control groups for AIS related research and/or for development of regression equations.

RESOURCE ALLOCATION - A CMI function of the Adaptive Model for managing all training resources declared in the Course Data Base as computer-managed. The AIS capability to balance student flow through a module, lesson, block or course to avoid queueing as a result of resource unavailability and to maximize use of critical resources.

SELF-PACING - A generic description of programs where learning and progress occur at each student's self-established pace. Generally, students whose rate of progress exceeds predetermined limits are counseled.

SKILL TRAINING - That instructional training aimed at remediating or compensating for particular student weaknesses in academically related areas (e.g., self-management skills, study skills).

SMALL-GROUP TRYOUTS - Defined in this project as the first phase of the formative evaluation. During this phase, the primary concern was to what extent the treatment was performing as designed.

SOFTWARE - See Computer Software

STATE-OF-THE-ART - Current level, state or condition of technology in disciplines related to computer-based education and training.

STRATEGIES - Specific instructional techniques applied within a module, lesson, block or other sequence of instruction and designed to meet individual needs and characteristics of various types of students considering the particular learning objective.

GLOSSARY OF TERMS (Continued)

STUDENT DATA PROFILE (SDP) - A computerized file that maintains comprehensive records for each student enrolled in an AIS course. Each student record contains bibliographic, preassessment and within-course performance data.

STUDENT PROGRESS MANAGEMENT COMPONENT (SPMC) - The AIS capability to predict and assign individual block and course completion time targets based on each student's individual aptitudes, abilities, and performance and to provide students and instructors with daily feedback on each student's progress toward the target completion times. Thus, SPMC consists of Student Progress Management Software and the Orientation/Time Management module.

SUMMATIVE EVALUATION - That type of evaluation research whose purpose is to assess the overall operational effectiveness of a program via a large scale tryout. For the purposes of this project, summative evaluation was considered to be a second large-scale tryout in which data on approximately 50 students per treatment were collected.

TARGETED COURSE COMPLETION RATE - A computer generated rate of progress through a course for each student which he/she must maintain to meet the course completion target.

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